Historic Triangle Comprehensive Transportation Study

the *heartbeat* of HAMPTON ROADS TPO

TRANSPORTATION PLANNING ORGANIZATION

July 2020

T20-06

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HISTORIC TRIANGLE COMPREHENSIVE TRANSPORTATION STUDY

PREPARED BY:

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

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TITLE:
Historic Triangle Comprehensive Transportation Study

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ABSTRACT

The purpose of this report is to assist James City County, Williamsburg, and York County officials with the transportation sections of their respective Comprehensive Plan updates. A Comprehensive Plan is a policy document that provides direction for policy makers to guide growth and development by providing the long-range vision, goals, and strategies of their communities. Every Virginia locality is required to have a Comprehensive Plan.

This report is broken down into separate sections for current and future conditions in the Historic Triangle. Roadway travel and congestion, safety, commuting patterns, rail, active transportation, public transportation, bridges, freight, air service, and sea level rise/storm surge are all examined in this report.

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ACKNOWLEDGMENTS & DISCLAIMERS
Prepared in cooperation with the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), Virginia Department of Transportation (VDOT), the Williamsburg Area Transit Authority (WATA), and the localities of James City County, the City of Williamsburg, and York County. The contents of this report reflect the views of the Hampton Roads Transportation Planning Organization (HRTPO). The HRTPO is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the FHWA, VDOT or Hampton Roads Planning District Commission. This report does not constitute a standard, specification, or regulation. FHWA or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

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INTRODUCTION

Located in the northwestern section of the Hampton Roads Metropolitan Planning Area, the Historic Triangle – comprised of James City County, Williamsburg, and York County – not only includes tourist destinations such as Busch Gardens, Colonial Williamsburg, Jamestown Settlement and the Yorktown Battlefield but also serves as a gateway for the Hampton Roads region (**Map 1**). I-64 is the most critical gateway to the region in terms of traffic volumes, tourists, and freight movement. Other major highways, such as US Routes 17 and 60, also provide access to the area through the Historic Triangle. Amtrak – which provides service to a station in Williamsburg – operates inter-city rail service through the area between Newport News and the Northeast Corridor. CSX Transportation operates freight rail service on the same corridor, and air passenger service is provided at nearby Newport News-Williamsburg International Airport. Public Transportation is also provided in the Historic Triangle via the Williamsburg Area Transit Authority, with connections to Hampton Roads Transit.

The purpose of this report is to assist James City County, Williamsburg, and York County officials with the transportation sections of their respective Comprehensive Plan updates. A Comprehensive Plan is a policy document that provides direction for policy makers to guide growth and development by providing the long-range vision, goals, and strategies of their communities. Every Virginia locality is required to have a Comprehensive Plan.

Because of the strong link between Historic Triangle communities, each locality aims to coordinate the timing of their Comprehensive Plan updates. Williamsburg and York County adopted their most recent Comprehensive Plans in 2013, while James City County adopted its most recent Plan in 2015. All three communities have begun the process of updating their Comprehensive Plans.

This report is an update to a similar report prepared by HRTPO in 2012. Since that report, a number of significant changes have occurred. The Hampton Roads Transportation Fund (HRTF) was created by the General Assembly, which is largely responsible for the ongoing widening of I-64 in the Historic Triangle. The SMART SCALE project prioritization process was created, ensuring that funding is invested in projects that meet the most critical transportation needs. After falling during the economic downturn, roadway travel levels have increased in recent years. And a few major projects in the Historic Triangle have been completed, including widening of sections of Fort Eustis Boulevard, George Washington Memorial Highway and Ironbound Road.

MAP 1 – HISTORIC TRIANGLE

This report is broken down into separate sections for current and future conditions. Each of the following transportation features is examined in this report:

- Highway
- Roadway Safety
- Commuting Patterns
- Rail
- Active Transportation
- Public Transportation
- Bridges
- Freight
- Air Service

CURRENT CONDITIONS - HIGHWAY

This chapter looks at current roadway conditions in the Historic Triangle and compares these conditions to historical trends. This chapter is divided into the following sections:

- **Roadway Inventory** - Includes an inventory of those roadways in the Historic Triangle that are classified as minor collectors and above. A description of National Highway System (NHS) Roadways and Corridors of Statewide Significance in the study area is also included, as is a summary of the mileage of the roadway network. Further, it includes a description of roadway improvements that have occurred over the last decade.
- **Roadway Travel** - Includes current and historical traffic volume data on roadways in the Historic Triangle and a summary of the current and historical roadway travel levels in terms of vehicle-miles of travel (VMT).
- **Roadway Congestion** - Includes an analysis of peak hour roadway congestion levels during the morning and afternoon peak travel periods and information on average travel speeds.

ROADWAY INVENTORY

Roadways are organized into a hierarchy based on their function, and are classified as arterials, collectors, or locals (**Figure 1**). Arterial roadways (which include Interstates, Freeways and Expressways, Other Principal Arterials, and Minor Arterials) provide more mobility, which is defined as the ability of traffic to pass through a defined area in a reasonable amount of time. Local roadways provide more accessibility, which is measured in the roadway's capability to provide access to and between land use activities within a defined area. Major and Minor Collectors offer a mix between providing mobility and accessibility.

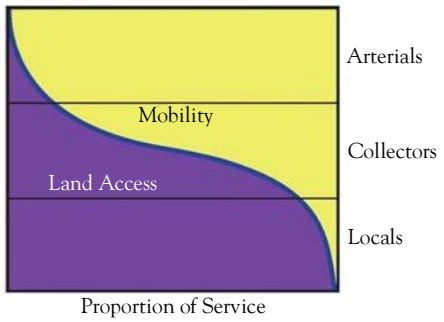


FIGURE 1 - ROADWAY FUNCTIONAL CLASSIFICATION DEFINITION

Roadways are also classified as urban or rural based on their location as defined by the U.S. Census Bureau. While all of the City of Williamsburg is classified as urban, James City County and York County have areas designated as both rural and urban.

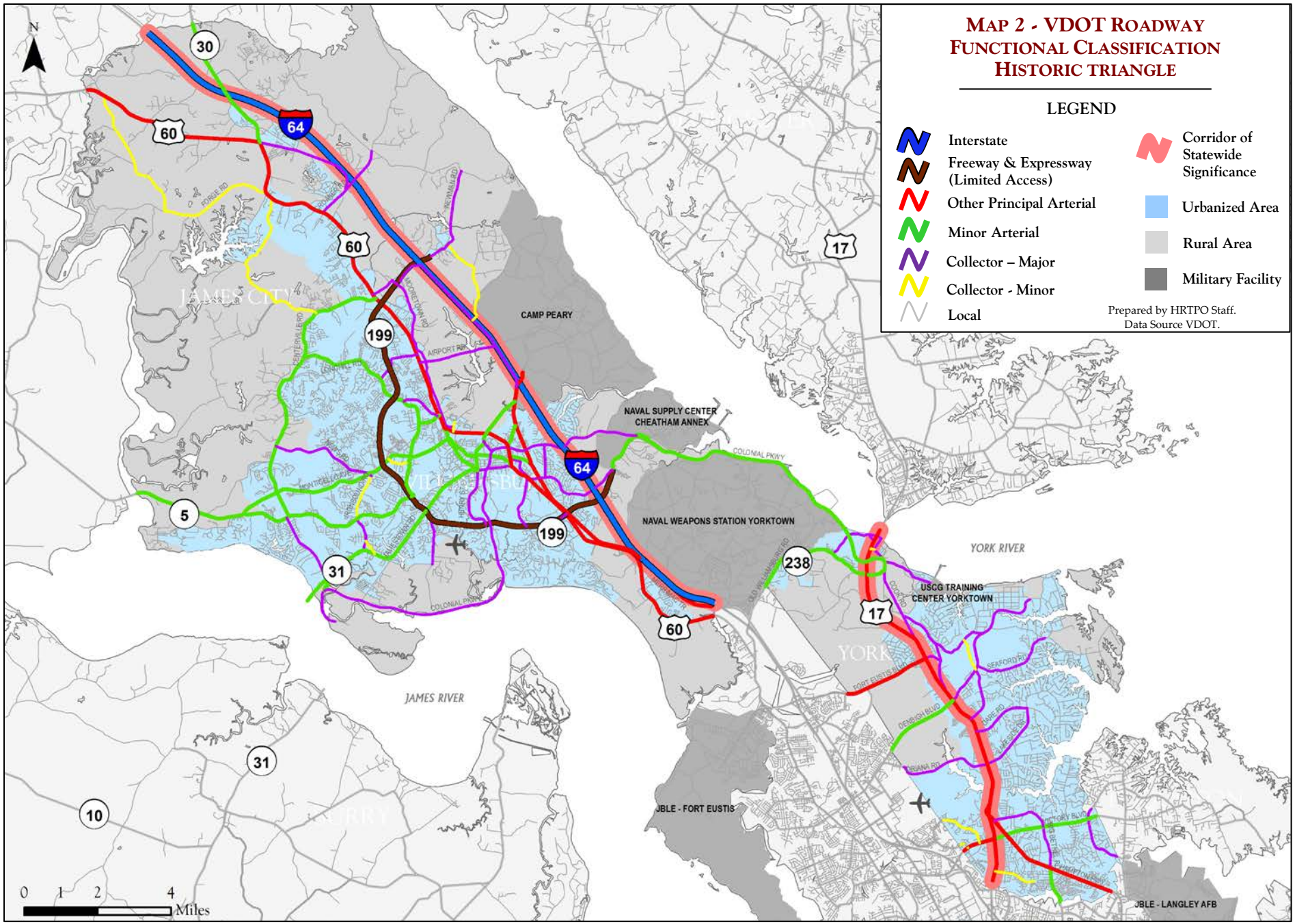
Figure 2 shows the number of miles (centerline miles) and the number of lane-miles[1] of roadway in each of the three localities by roadway functional classification, and **Map 2** on page 3 shows the functional classification for roadways throughout the Historic Triangle.

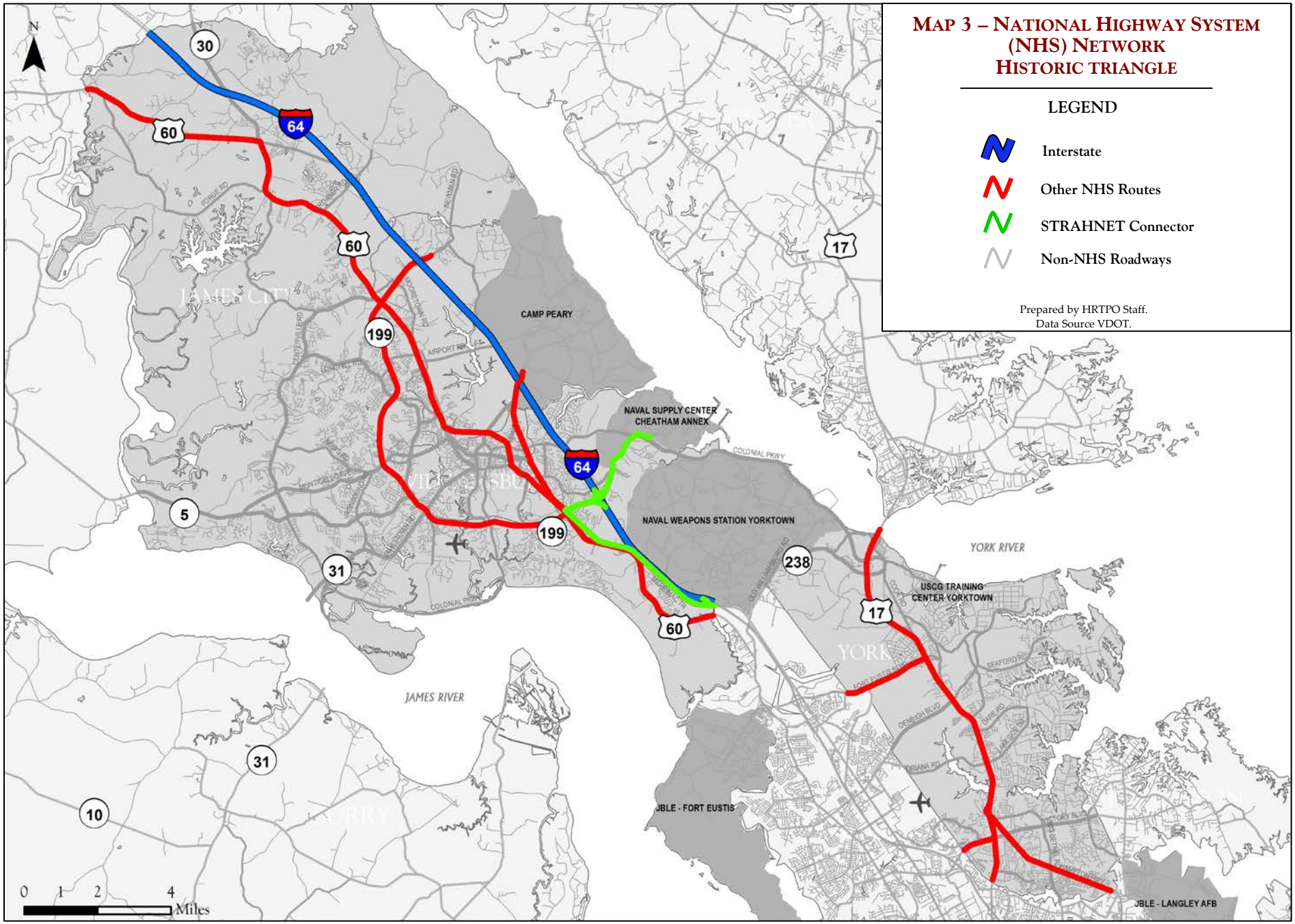
Functional Class	James City County		Williamsburg		York County	
	Centerline Miles	Lane-Miles	Centerline Miles	Lane-Miles	Centerline Miles	Lane-Miles
Interstate	11.04	44.16	0.00	0.00	11.23	44.92
Freeway & Expressway	9.83	39.32	0.47	1.88	4.09	16.36
Other Principal Arterial	21.45	79.60	4.87	16.48	26.21	106.60
Minor Arterial	36.09	80.72	9.18	21.98	21.52	44.30
Collector - Major	28.78	66.40	9.38	19.34	45.79	90.70
Collector - Minor	14.03	28.06	0.00	0.00	6.14	10.52
Local	285.66	574.26	33.05	65.55	254.07	527.63
LOCALITY TOTAL	406.88	912.52	56.95	125.23	369.05	841.03

FIGURE 2 – CENTERLINE MILES AND LANE-MILES OF ROADWAY BY VDOT FUNCTIONAL CLASSIFICATION (2017)

Data source: VDOT.

[1] A lane-mile is defined as the length of a roadway segment multiplied by the number of lanes. A one-mile long, four-lane wide roadway segment would comprise four lane-miles.


MAP 2 - VDOT ROADWAY FUNCTIONAL CLASSIFICATION HISTORIC TRIANGLE
LEGEND
Interstate
Freeway & Expressway (Limited Access)
Other Principal Arterial
Minor Arterial
Collector – Major
Collector - Minor
Local
Corridor of Statewide Significance
Urbanized Area
Rural Area
Military Facility
Prepared by HRTPO Staff.
Data Source VDOT.
N
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
JAMES CITY
YORK
0 1 2 4 Miles


MAP 3 – NATIONAL HIGHWAY SYSTEM (NHS) NETWORK
HISTORIC TRIANGLE
LEGEND
Interstate
Other NHS Routes
STRAHNET Connector
Non-NHS Roadways
Prepared by HRTPO Staff.
Data Source VDOT.
N
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
JAMES CITY
YORK
30
60
64
17
199
5
31
238
10
0 1 2 4
Miles

National Highway System

According to the Federal Highway Administration (FHWA), the National Highway System (NHS) consists of roadways important to the nation's economy, defense, and mobility. The NHS includes Interstates, Other Principal Arterials, the Strategic Highway Network (STRAHNET), Major Strategic Highway Network Connectors, and Intermodal Connectors. Improvements on NHS roadways are eligible for Federal funding through the National Highway Performance Program (NHPP).

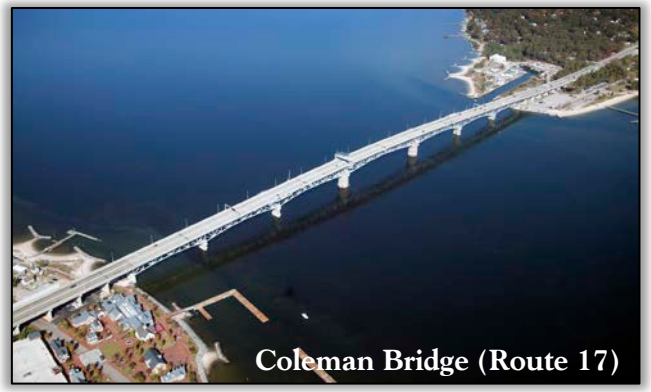
Map 3 on page 4 shows those roadways in the Historic Triangle that are part of the NHS.

Corridors of Statewide Significance

In recent years, the state has designated a network of Corridors of Statewide Significance (CoSS), and recent legislation mandates that localities include local segments of the CoSS in their comprehensive plan updates.

Corridors of Statewide Significance are defined as "An integrated, multimodal network of transportation facilities that connect major centers of activity within and through the Commonwealth and promote the movement of people and goods essential to the economic prosperity of the state." Corridors identified as CoSS must demonstrate all of the following characteristics:

- Multiple modes and/or an extended freight corridor.
- Connection among regions, states, and/or major activity centers.
- High volume of travel.
- Unique statewide function and/or fulfillment of statewide goal.


Coleman Bridge (Route 17)

There are twelve Corridors of Statewide Significance throughout Virginia. Two of these corridors – the East-West Corridor (Interstate 64) and the Coastal Corridor (US Route 17) – are located within the Historic Triangle and shown in Map 2 on page 3. More information on these Corridors of Statewide Significance is included in the Future Conditions - VTrans section of this report.

Recent Roadway Improvements

A number of roadway improvements have occurred throughout the Historic Triangle over the last decade. These improvements include both major projects such as major roadway widenings as well as many smaller projects such as adding intersection turn lanes, installing and upgrading traffic signals, and adding paved shoulders. **Figure 3** on page 6 shows these recent roadway improvements (excluding bridge, active transportation, and transit improvements, which are included separately in this report).

The largest roadway improvement projects that have been completed in the Historic Triangle over the last decade include Phase II of the I-64 Widening project, widening Fort Eustis Boulevard, widening George Washington Memorial Highway (Route 17) between Hampton Highway and Wolf Trap Road, and widening Ironbound Road in James City County and Williamsburg.

JAMES CITY COUNTY

Route Num	Facility	Improvement	Year Completed
615	Ironbound Road	Add Right Turn Lane at John Tyler Hwy	2008
60	Richmond Road	Install Traffic Signal at Fire Station #2	2010
614	Centerville Road	Install Traffic Signal and Add Turn Lanes at Longhill Rd	2011
199	Route 199	Add Turn Lanes at John Tyler Hwy	2011
199	Route 199	Upgrade Signal at Intersection with John Tyler Hwy	2012
615	Ironbound Road	Widen to 4 Lanes between Monticello Ave and Williamsburg CL	2013
612	Longhill Road	Signal Upgrade and Install Median Barrier at Olde Towne Road	2013
60	Richmond Road	Turn Lane Improvements - Centerville Rd and Lightfoot Rd	2013
60	Richmond Road	Upgrade Signal at Airport Road	2013
-	Country Club Drive	Reconstruction - Country Club Dr, Country Club Ct, and Lexington Dr	2014
-	Neighbors Drive	Reconstruction	2015
-	Marclay Road	Reconstruction - Airport Access	2016
321	Monticello Avenue	Add turn lanes at News Road and Old News Road	2016
60	Richmond Road	Intersection Improvements at Route 199 West Ramp	2016
199	Route 199	Intersection Improvements at Brookwood Drive	2018
64	I-64	Widen to 6 Lanes between Newport News CL and York CL (Phase II)	2019

WILLIAMSBURG

Route Num	Facility	Improvement	Year Completed
-	Quarterpath Rd	Reconstruction - Colonial Williamsburg Nursery to York St	2008
-	Quarterpath Rd	Roadway Improvements between Route 199 and Shopping Center	2009
-	Armistead Ave/Prince George St	Reconstruction - Armistead Ave and Prince George St	2013
-	Battery Blvd	New Roadway	2013
-	Ironbound Rd	Widen to 4 Lanes between James City CL and Depue Dr	2013
60	York St	Corridor Improvements	2014
-	Ironbound Rd	Intersection Improvements at Longhill Rd	2018

YORK COUNTY

Route Num	Facility	Improvement	Year Completed
646	Lightfoot Road	Install Signal - Lightfoot Road (Rte 646) at Mooretown Road (Rte 603)	2008
621	Grafton Drive	Intersection Realignment at Amory Ln	2008
238	Old Williamsburg Road	Install Traffic Signal at Baptist Rd/Yorktown Weapons Station Entrance	2008
143	Merrimac Trail	Upgrade Signal - Route 143 at Route 132	2010
199	Route 199	Improve Traffic Signal at Merrimac Trail	2010
17	George Washington Mem Highway	Improve Rail Crossing - South of Fort Eustis Blvd	2011
134	Hampton Highway	Extend Turn Lane - Route 134 at Tabb Smith Trail	2011
105	Fort Eustis Boulevard	Widen from 2 to 4 Lanes - Newport News CL to George Washington Hwy	2012
620	Lakeside Drive	Construct Left and Right Turn Lanes - Various locations from Route 17 to Dare Rd	2014
F137	East Rochambeau Drive	Construct Paved Shoulders - East of Mooretown Road	2015
F137	East Rochambeau Drive	Intersection Improvements at Airport Road	2015
17	George Washington Mem Highway	Widen from 4 to 6 Lanes - Hampton Hwy to Wolf Trap Rd	2016
634	Old York-Hampton Highway	Upgrade Flashing Lights and Add Gates at R/R	2017
64	I-64	Widen to 6 Lanes between James City CL and North of Route 199 (Phase II)	2019

FIGURE 3 – RECENT ROADWAY IMPROVEMENTS IN THE HISTORIC TRIANGLE, 2008 TO 2019

Data source: HRTPO analysis of VDOT and HRTPO data. Data does not include active transportation, bridge, and transit improvements.

Roadway Travel

VDOT collects traffic volume data at hundreds of locations in the Historic Triangle, of which approximately 225 locations – 76 in James City County, 43 in Williamsburg, and 106 in York County – are on roadways with functional classifications of minor collector or above. At most of these 225 locations, data is collected once every three years over a 48-hour period. These counts were most recently collected in each of the three localities in 2016.

VDOT produces Annual Average Daily Traffic (AADT) volume estimates based on these counts. These estimates describe the average number of vehicles that travel on each roadway segment each day, based on the total annual traffic estimate divided by the number of days in the year.

Figure 5 on pages 8-12 includes historical weekday volumes for each roadway classified as a minor collector and above based on the 48-hour counts, and VDOT's AADT volume estimates for those years where VDOT collected traffic count data. These AADT estimates are also shown on **Map 4** on page 13. VDOT also produces AADT estimates for many local roadways that they maintain within counties. These AADT estimates are included in VDOT's Daily Traffic Volume Estimates Jurisdiction reports, which are available on VDOT's website at **http://virginiadot.org/info/ct-TrafficCounts.asp**.

Among the 225 locations on minor collectors and above where traffic counts are collected in the study area, 192 locations were counted in both 2007 and 2016. Of these 192 locations, 117 locations (61%) experienced an increase in AADT volumes over this time period, with 36 locations experiencing an increase of 20% or more. Of the 58 locations that experienced a decrease in AADT volumes over this time period, 8 experienced a decrease of 20% or more.

Based on these traffic counts and AADT estimates, VDOT produces estimates of total roadway travel in each locality (in terms of vehicle-miles of travel). **Figure 4** shows the average daily vehicle-miles of travel (VMT) in each Historic Triangle locality in those years between 2004 and 2016 where VDOT collected traffic count data. In 2016 there were over 4 million vehicle-miles of travel each day throughout the Historic Triangle – 1.9 million vehicle-miles in James City County, 0.3 million vehicle-miles in Williamsburg, and 2.1 million vehicle-miles in York County.

	2004	2007	2010	2013	2016
James City County	1,529,800	1,704,200	1,797,700	1,770,100	1,936,200
Williamsburg	253,900	250,300	265,500	251,400	259,300
York County	1,996,300	2,037,900	2,165,000	2,087,400	2,147,300
HISTORIC TRIANGLE	3,780,000	3,992,400	4,228,200	4,108,900	4,342,800

Figure 4 – Daily Vehicle-Miles of Travel, 2004 to 2016
Data Source: VDOT.

While the amount of roadway travel was largely flat during the economic downturn, the amount of travel has increased in recent years. Between 2004 and 2016, the amount of roadway travel increased 27% in James City County, 2% in Williamsburg, and 8% in York County. By comparison, the population increased 32% in James City County, 15% in Williamsburg, and 11% in York County during this time period.

Looking at the three-year period between 2013 and 2016, roadway travel increased 9% in James City County and 3% in both Williamsburg and York County. Roadway travel in Hampton Roads only increased 3% between 2004 and 2016 and 4% between 2013 and 2016 according to VDOT data.

JAMES CITY COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume 2007	2010	2013	2016	2016 Count Date	Annual Average Daily Traffic (AADT) 2007	2010	2013	2016	Change in AADT 2007 to 2016	
645	Airport Rd	US 60 - Richmond Rd	Rte 603 - Mooretown Rd/York CL	-	-	-	10,066	12/1	-	-	-	10,000	-	-
30	Barhamsville Rd	I-64	US 60 - Richmond Rd	7,124	9,423	9,537	10,250	2/9-2/10	6,800	9,400	9,600	10,000	+3,200	+47.1%
700	Brookwood Dr	Rte 617 - Lake Powell Rd	SR 199	9,845	8,761	8,498	8,534	2/17-2/18	9,400	8,800	8,200	8,200	-1,200	-12.8%
614	Centerville Rd	SR 5 - John Tyler Hwy	Rte 633 - Jolly Pond Rd	4,719	4,248	5,246	5,099	2/9-2/10	4,300	4,800	5,400	5,100	+800	+18.6%
614	Centerville Rd	Rte 633 - Jolly Pond Rd	Adams Hunt Dr	9,407	7,414	8,986	9,547	2/9-2/10	8,700	8,400	9,100	9,500	+800	+9.2%
614	Centerville Rd	Adams Hunt Dr	US 60 - Richmond Rd	10,319	9,095	9,990	10,837	2/9-2/10	10,000	9,700	9,500	11,000	+1,000	+10.0%
631	Chickahominy Rd	Rte 632 - Cranstons Mill Pond Rd	US 60 - Richmond Rd	1,586	1,592	1,901	1,774	2/3-2/4	1,500	1,700	1,900	1,700	+200	+13.3%
	Colonial Pkwy	Jamestown Visitor Center	Williamsburg CL	2,118	-	-	-	-	1,900	2,400	2,400	2,400	+500	+26.3%
632	Cranston's Mill Pond Rd	Rte 611 - Jolly Pond Rd	Rte 631 - Chickahominy Rd	-	521	530	549	10/14	570	520	530	550	-20	-3.5%
607	Croaker Rd	US 60 - Richmond Rd	Rte 760 - Maxton Ln	8,185	8,364	9,150	9,802	2/2-2/3	7,800	9,100	9,400	9,800	+2,000	+25.6%
607	Croaker Rd	Rte 760 - Maxton Ln	SR 30 - Rochambeau Dr	8,059	8,286	8,910	9,391	2/2-2/3	7,700	9,100	9,100	9,400	+1,700	+22.1%
30	Croaker Rd	SR 30 - Rochambeau Dr	I-64	10,997	11,021	11,898	12,586	2/2-2/3	11,000	12,000	12,000	14,000	+3,000	+27.3%
607	Croaker Rd	I-64	Rte 602 - Fenton Mill Rd	6,773	6,494	6,090	5,471	2/23-2/24	6,400	6,700	6,200	6,100	-300	-4.7%
607	Croaker Rd	Rte 602 - Fenton Mill Rd	Rte 606 - Ware Creek Rd	3,515	3,352	3,227	3,165	2/2-2/3	3,300	3,700	3,300	3,500	+200	+6.1%
607	Croaker Rd	Rte 606 - Ware Creek Rd	Rte 605 - Croaker Landing Rd	1,023	1,056	881	791	2/2-2/3	970	1,200	920	880	-90	-9.3%
615	Depue Dr	Rte 615 - Ironbound Rd	SR 322 - Ashbury Rd	6,223	8,151	8,335	9,866	2/10-2/11	6,100	7,800	7,800	9,600	+3,500	+57.4%
615	Depue Dr	SR 322 - Ashbury Rd	Rte 612 - Longhill Rd	7,920	9,664	9,405	11,039	2/10-2/11	7,700	9,300	8,800	11,000	+3,300	+42.9%
603	Diascund Rd	Rte 610 - Forge Rd	US 60 - Richmond Rd	863	687	662	589	2/3-2/4	680	750	690	620	-60	-8.8%
610	Forge Rd	Rte 603 - Diascund Rd	US 60 - Richmond Rd	2,527	2,576	2,699	2,583	2/3-2/4	2,400	2,700	2,800	2,700	+300	+12.5%
614	Greensprings Rd	SR 31 - Jamestown Rd	SR 5 - John Tyler Hwy	2,959	2,984	3,113	4,690	2/17-2/18	2,700	3,200	3,200	3,100	+400	+14.8%
64	I-64	New Kent CL	SR 30 - Old Stage Rd	49,376	48,913	45,720	50,803	All 2016	47,000	53,000	54,000	58,000	+11,000	+23.4%
64	I-64	SR 30 - Old Stage Rd	Rte 607 - Croaker Rd	55,206	51,775	52,216	57,238	All 2016	56,000	58,000	59,000	64,000	+8,000	+14.3%
64	I-64	Rte 607 - Croaker Rd	York CL	62,101	58,252	59,067	64,620	All 2016	63,000	64,000	65,000	70,000	+7,000	+11.1%
64	I-64	York CL	SR 143 Merrimac Trail/NN CL	86,497	87,885	83,803	84,322	8/23 - 8/24	81,000	82,000	79,000	87,000	+6,000	+7.4%
615	Ironbound Rd	Rte 681 - Sandy Bay Rd	SR 5 - John Tyler Hwy	7,570	7,150	6,898	10,801	2/17-2/18	7,300	7,200	6,700	6,900	-400	-5.5%
615	Ironbound Rd	SR 5 - John Tyler Hwy	Rte 613 - News Road	10,509	9,675	9,104	9,144	2/17-2/18	10,000	9,600	8,800	8,900	-1,100	-11.0%
783	Ironbound Rd	Rte 613 - News Road	Dead End	1,073	1,070	1,022	1,226	6/7-6/8	990	1,100	1,100	1,100	+110	+11.1%
615	Ironbound Rd	Dead End	Rte 616 - Strawberry Plains Rd	2,037	1,988	2,045	4,312	2/9-2/10	1,900	2,000	2,000	4,300	+2,400	+126.3%
615	Ironbound Rd	Rte 616 - Strawberry Plains Rd	SR 321 - Monticello Ave	7,659	9,382	11,179	10,867	2/9-2/10	7,500	9,000	11,000	11,000	+3,500	+46.7%
615	Ironbound Rd	SR 321 - Monticello Ave	Williamsburg CL	9,631	11,023	10,534	12,269	2/10-2/11	9,300	11,000	9,800	12,000	+2,700	+29.0%
359	Jamestown Festival Pkwy	Colonial Pkwy	SR 31 - Jamestown Rd	1,206	1,498	1,755	1,271	2/17-2/18	1,100	2,200	1,600	1,200	+100	+9.1%
31	Jamestown Rd	Jamestown Ferry	Rte 681 - Sandy Bay Rd	7,910	-	6,838	7,315	2/17-2/18	7,600	16,000	7,100	7,100	-500	-6.6%
31	Jamestown Rd	Rte 681 - Sandy Bay Rd	Williamsburg CL	9,820	9,567	8,643	9,139	2/17-2/18	9,500	8,900	8,300	8,900	-600	-6.3%
5	John Tyler Memorial Hwy	Charles City CL	Rte 5000 - Monticello Ave	3,214	2,885	2,894	4,456	2/17-2/18	3,100	3,000	3,000	3,100	0	0.0%
5	John Tyler Memorial Hwy	Rte 5000 - Monticello Ave	Rte 615 - Ironbound Rd	8,147	8,033	7,621	8,099	2/17-2/18	7,800	8,400	8,000	7,900	+100	+1.3%
5	John Tyler Memorial Hwy	Rte 615 - Ironbound Rd	Rte 652 - Stanley Dr	11,506	10,663	9,816	11,078	2/17-2/18	11,000	9,900	9,400	11,000	0	0.0%
5	John Tyler Memorial Hwy	Rte 652 - Stanley Dr	SR 199	18,522	17,546	16,004	18,245	2/17-2/18	18,000	16,000	15,000	18,000	0	0.0%
611	Jolly Pond Rd	Rte 632 - Cranston's Mill Pond Rd	Rte 614 - Centerville Rd	-	1,192	1,188	1,196	10/14	1,300	1,200	1,200	1,200	-100	-7.7%
617	Lake Powell Rd	Treasure Island Rd	Rte 700 - Brookwood Dr	2,073	1,427	1,573	1,438	2/17-2/18	2,000	1,500	1,500	1,400	-600	-30.0%
612	Longhill Rd	Rte 614 - Centerville Rd	Rte 658 - Olde Towne Rd	7,567	6,577	7,288	7,943	2/10-2/11	7,000	7,200	7,500	7,700	+700	+10.0%
612	Longhill Rd	Rte 658 - Olde Towne Rd	Rte 615 - Depue Dr	17,721	16,087	16,518	16,878	2/10-2/11	17,000	17,000	16,000	16,000	-1,000	-5.9%
612	Longhill Rd	Rte 615 - Depue Dr	SR 322 - Ashbury Rd	-	-	-	4,592	2/23-2/24	14,000	12,000	13,000	4,600	-9,400	-67.1%
612	Longhill Rd	SR 322 - Ashbury Rd	Williamsburg CL	4,215	4,237	4,605	4,960	2/10-2/11	9,200	8,800	8,900	4,800	-4,400	-47.8%
143	Merrimac Trail	York CL	Rte 641 - Penniman Rd/York CL	16,543	16,342	8,618	16,458	2/17-2/18	16,000	15,000	15,000	16,000	0	0.0%
143	Merrimac Trail	Newport News CL	York CL	10,282	10,021	10,828	11,600	2/17-2/18	10,000	9,300	10,000	11,000	+1,000	+10.0%
5000	Monticello Ave	SR 5 - John Tyler Hwy	Rte 613 - News Road	11,395	-	-	12,433	2/17-2/18	-	-	-	12,000	-	-
5000	Monticello Ave	Rte 613 - News Road	SR 199	41,348	-	39,564	38,707	2/24-2/25	-	-	-	38,000	38,000	-	-
321	Monticello Ave	SR 199	Rte 615 - Ironbound Rd	25,204	24,179	22,769	34,428	3/15-3/16	23,000	24,000	23,000	32,000	+9,000	+39.1%

FIGURE 5 – WEEKDAY AND ANNUAL AVERAGE DAILY TRAFFIC VOLUMES, 2007 TO 2016

Data source: VDOT. '-' indicates data is not available for that roadway segment and year.

JAMES CITY COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume 2007	2010	2013	2016	2016 Count Date	Annual Average Daily Traffic (AADT) 2007	2010	2013	2016	Change in AADT 2007 to 2016	
646	Newman Rd	York CL	Rte 768 - North Cove Rd	1,247	1,238	1,284	1,317	2/2-2/3	1,200	1,300	1,300	1,500	+300	+25.0%
646	Newman Rd	Rte 768 - North Cove Rd	Rte 606 - Riverview Rd	1,051	1,035	1,070	1,078	2/2-2/3	970	1,100	1,100	1,200	+230	+23.7%
613	News Rd	Rte 614 - Centerville Rd	Powhatan Secondary	3,349	3,440	3,874	6,204	2/9-2/10	3,200	3,600	4,000	4,000	+800	+25.0%
613	News Rd	Powhatan Secondary	Rte 5000 - Monticello Ave	7,863	7,908	8,085	8,546	2/9-2/10	7,600	8,300	8,300	8,500	+900	+11.8%
613	News Rd	Rte 5000 - Monticello Ave	Rte 615 - Ironbound Rd	11,003	10,495	9,464	11,501	6/7-6/8	10,000	11,000	9,700	11,000	+1,000	+10.0%
742	Old News Rd	Rte 613 - News Rd	Rte 5000 - Monticello Ave	2,756	2,659	3,682	4,065	2/9-2/10	2,600	2,800	3,700	4,100	+1,500	+57.7%
30	Old Stage Hwy	New Kent CL	I-64	8,516	9,512	9,869	10,220	2/23-2/24	8,100	10,000	9,900	11,000	+2,900	+35.8%
658	Olde Towne Rd	Rte 612 - Longhill Rd	King William Dr	8,325	8,378	8,113	7,957	2/10-2/11	7,900	8,100	8,000	7,700	-200	-2.5%
658	Olde Towne Rd	King William Dr	Chisel Run Rd	9,422	8,537	8,936	8,982	2/10-2/11	9,100	9,100	8,700	8,700	-400	-4.4%
658	Olde Towne Rd	Chisel Run Rd	US 60 - Richmond Rd	10,439	9,479	9,742	9,867	2/10-2/11	9,700	9,100	9,600	9,600	-100	-1.0%
60	Pocahontas Trail	Williamsburg CL	SR 199	8,513	8,165	8,386	9,053	3/15-3/16	8,300	7,600	8,100	8,500	+200	+2.4%
60	Pocahontas Trail	York CL	Newport News CL	9,461	9,243	8,841	10,247	2/17-2/18	9,200	8,600	8,700	9,900	+700	+7.6%
60	Richmond Rd	New Kent CL	SR 30 - Barhamsville Rd	6,793	5,861	5,831	5,795	2/3-2/4	6,400	6,400	5,900	6,100	-300	-4.7%
60	Richmond Rd	SR 30 - Barhamsville Rd	Rte 607 - Croaker Rd	14,015	13,792	14,432	15,041	2/3-2/4	13,000	15,000	15,000	15,000	+2,000	+15.4%
60	Richmond Rd	Rte 607 - Croaker Rd	Rte 614 - Centerville Rd	19,919	21,419	19,481	21,746	2/2-3/16	19,000	20,000	18,000	21,000	+2,000	+10.5%
60	Richmond Rd	Rte 614 - Centerville Rd	SR 199	24,656	26,430	22,023	23,128	2/2-2/3	24,000	25,000	21,000	23,000	-1,000	-4.2%
60	Richmond Rd	SR 199	Williamsburg CL	13,364	15,206	13,526	12,870	2/2-2/3	13,000	14,000	13,000	13,000	0	0.0%
30	Rochambeau Dr	US 60 - Richmond Rd	Rte 607 - Croaker Rd	7,764	7,164	8,092	9,135	2/10-2/11	7,600	7,500	8,100	8,900	+1,300	+17.1%
199	SR 199	US 60 - Richmond Rd	Rte 612 - Longhill Rd	22,252	23,523	26,216	25,732	2/2-2/3	22,000	23,000	25,000	25,000	+3,000	+13.6%
199	SR 199	Rte 612 - Longhill Rd	SR 321 - Monticello Ave	28,869	29,040	30,752	30,029	2/2-2/3	28,000	28,000	29,000	30,000	+2,000	+7.1%
199	SR 199	SR 321 - Monticello Ave	SR 5 - John Tyler Hwy	30,270	27,515	31,196	28,865	2/2-2/3	29,000	27,000	30,000	28,000	-1,000	-3.4%
199	SR 199	SR 5 - John Tyler Hwy	Williamsburg CL	37,160	36,498	35,623	36,257	2/2-2/3	34,000	35,000	33,000	36,000	+2,000	+5.9%
199	SR 199	Williamsburg CL	Brookwood Dr	37,015	36,180	37,165	36,971	2/2-2/3	36,000	36,000	34,000	36,000	0	0.0%
199	SR 199	Brookwood Dr	SR 132 - Henry St	33,784	34,542	33,843	33,813	2/2-2/3	32,000	33,000	32,000	33,000	+1,000	+3.1%
199	SR 199	SR 132 - Henry St	Mounts Bay Rd	34,021	33,078	34,702	34,512	2/2-2/3	33,000	33,000	32,000	34,000	+1,000	+3.0%
199	SR 199	Mounts Bay Rd	US 60 - Pocahontas Trail/York CL	32,250	31,169	33,119	32,267	2/2-2/3	31,000	31,000	31,000	32,000	+1,000	+3.2%
681	Sandy Bay Rd	SR 31 - Jamestown Rd	Rte 615 - Ironbound Rd	5,452	4,994	4,841	4,847	2/17-2/18	5,300	5,100	4,700	4,700	-600	-11.3%
616	Strawberry Plains Rd	SR 5 - John Tyler Hwy	Rte 615 - Ironbound Rd	6,946	8,048	8,593	9,813	2/23-2/24	6,800	7,500	8,000	9,800	+3,000	+44.1%

WILLIAMSBURG

Route Num	Location	Segment From	Segment To	Weekday Volume 2007	2010	2013	2016	2016 Count Date	Annual Average Daily Traffic (AADT) 2007	2010	2013	2016	Change in AADT 2007 to 2016	
5	Boundary St	Jamestown Rd	Francis St	11,076	12,532	9,746	9,366	7/26-7/27	9,800	12,000	9,200	8,800	-1,000	-10.2%
60	Bypass Rd	Richmond Rd	York CL	21,128	26,802	24,178	26,368	7/12-7/14	20,000	25,000	23,000	25,000	+5,000	+25.0%
60	Bypass Rd	SR 132 - Henry St	Parkway Dr	13,844	15,868	15,105	14,772	7/12-7/14	12,000	15,000	14,000	14,000	+2,000	+16.7%
60	Bypass Rd	Parkway Dr	SR 5 - Capitol Landing Rd	11,409	13,198	11,598	12,010	7/12-7/14	10,000	12,000	11,000	11,000	+1,000	+10.0%
5	Capitol Landing Rd	US 60 - Bypass Rd	SR 143 - Merrimac Trail	6,754	-	6,980	7,406	7/12-7/14	6,300	6,900	6,700	6,900	+600	+9.5%
90003	Colonial Pkwy	James City CL	York CL	2,919	-	-	-	-	6,200	4,700	4,700	4,700	-1,500	-24.2%
-	England St S	Newport Ave	Francis St	-	1,803	1,712	1,966	7/26-7/27	2,300	1,800	1,700	1,900	-400	-17.4%
5	Francis St	Boundary St	SR 132 - Henry St	7,660	8,917	7,303	6,890	7/26-7/27	6,700	8,200	6,600	6,500	-200	-3.0%
7075	Francis St	SR 132 - Henry St	Waller St	7,087	6,477	-	5,898	7/26-7/27	6,200	6,000	5,600	5,500	-700	-11.3%
132	Henry St	SR 199	Ireland St	4,120	3,801	3,145	3,071	7/12-7/13	3,700	3,600	2,900	2,900	-800	-21.6%
132	Henry St	Ireland St	Francis St	5,346	5,660	4,255	4,229	7/12-7/13	4,800	5,400	3,900	4,000	-800	-16.7%
5	Henry St	Francis St	SR 5 - Lafayette St	5,565	5,803	4,926	5,451	7/12-7/14	4,900	5,500	4,500	5,100	+200	+4.1%
132	Henry St	SR 5 - Lafayette St	SR 132 Y	7,504	6,853	5,882	5,999	7/12-7/14	6,600	6,400	5,500	5,600	-1,000	-15.2%
132	Henry St	SR 132 Y	US 60 - Bypass Rd	9,114	10,116	8,670	9,112	7/12-7/14	8,000	9,400	8,200	8,500	+500	+6.3%

FIGURE 5 (CONTINUED) – WEEKDAY AND ANNUAL AVERAGE DAILY TRAFFIC VOLUMES, 2007 TO 2016

Data source: VDOT. '-' indicates data is not available for that roadway segment and year.

WILLIAMSBURG

Route Num	Location	Segment From	Segment To	Weekday Volume 2007	2010	2013	2016	2016 Count Date	Annual Average Daily Traffic (AADT) 2007	2010	2013	2016	Change in AADT 2007 to 2016	
7081	Ironbound Rd	James City CL	Longhill Rd	10,115	9,913	9,806	9,898	7/12-7/13	8,900	9,100	9,200	9,300	+400	+4.5%
7081	Ironbound Rd	Longhill Rd	Richmond Rd	13,632	15,292	14,493	12,334	8/24-8/25	12,000	14,000	14,000	11,000	-1,000	-8.3%
31	Jamestown Rd	Williamsburg CL	SR 199	18,414	17,349	16,829	16,665	7/26-7/27	16,000	16,000	16,000	16,000	0	0.0%
5	Jamestown Rd	SR 199	John Tyler Hwy	11,933	11,994	9,134	9,100	7/26-7/27	11,000	11,000	8,600	8,500	-2,500	-22.7%
5	Jamestown Rd	John Tyler Hwy	Boundary St	12,235	13,820	10,161	9,630	7/26-7/27	11,000	13,000	9,700	9,000	-2,000	-18.2%
7077	Lafayette St	Richmond Rd	Bacon Ave	8,345	8,911	-	9,189	7/12-7/13	7,300	8,200	8,200	8,700	+1,400	+19.2%
7077	Lafayette St	Bacon St	SR 132 - Henry St	9,796	9,835	9,821	10,268	7/12-7/13	8,600	9,300	9,400	9,700	+1,100	+12.8%
5	Lafayette St	SR 132 - Henry St	Capital Landing Rd	9,682	10,151	10,046	10,361	7/13-7/14	8,500	9,300	9,400	9,600	+1,100	+12.9%
5	Lafayette St	Capital Landing Rd	US 60 - Page St	7,890	8,263	8,160	8,494	7/13-7/14	6,900	7,800	7,800	7,800	+900	+13.0%
7082	Longhill Rd	Ironbound Rd	James City CL	4,215	4,237	4,605	4,638	8/24-8/25	3,700	3,900	4,500	4,200	+500	+13.5%
-	Matoaka Court	Mount Vernon Avenue	Richmond Road	-	837	770	699	7/12-7/13	730	840	760	690	-40	-5.5%
143	Merrimac Trail	York CL	SR 5 - Capital Landing Rd	7,617	7,217	7,273	7,029	7/12-7/14	6,700	6,700	6,900	6,500	-200	-3.0%
143	Merrimac Trail	SR 5 - Capital Landing Rd	York CL	9,974	9,445	9,341	9,898	7/12-7/13	8,800	8,800	8,900	9,300	+500	+5.7%
321	Monticello Ave	Rte 615 - Ironbound Rd	Compton Dr	18,412	17,358	16,257	-	-	17,000	18,000	17,000	16,000	-1,000	-5.9%
7083	Monticello Ave	Compton Dr	Richmond Rd	15,876	17,074	15,269	15,922	7/12-7/13	14,000	16,000	14,000	15,000	+1,000	+7.1%
60	Page St	SR 5 - Capitol Landing Rd	Second St	13,531	15,332	14,186	14,589	7/13-8/25	12,000	14,000	20,000	21,000	+9,000	+75.0%
60	Page St	Second St	Lafayette St	-	15,804	14,062	14,717	7/13-7/14	14,000	15,000	13,000	14,000	0	0.0%
7086	Penniman Rd	Page St	York CL	2,375	2,822	2,951	3,325	7/27-7/28	2,100	2,700	2,800	3,100	+1,000	+47.6%
-	Quarterpath Rd	SR 199	US 60 - York St	-	595	1,169	1,218	7/13-7/14	610	550	1,100	1,100	+490	+80.3%
60	Richmond Rd	James City CL	Ironbound Rd	19,148	23,783	-	22,330	7/12-7/13	17,000	22,000	20,000	21,000	+4,000	+23.5%
60	Richmond Rd	Ironbound Rd	Bypass Rd	25,776	25,987	27,656	26,383	7/26-7/27	24,000	24,000	26,000	25,000	+1,000	+4.2%
7075	Richmond Rd	Bypass Rd	Monticello Ave	19,306	19,001	20,187	20,981	7/12-7/13	17,000	18,000	19,000	20,000	+3,000	+17.6%
7075	Richmond Rd	Monticello Ave	Boundary St	12,395	13,511	10,623	10,913	7/12-7/13	11,000	13,000	10,000	10,000	-1,000	-9.1%
132	SR 132 Y	Colonial Parkway	SR 132 - Henry St	6,115	2,967	-	5,861	7/12-7/14	5,400	5,900	5,600	5,500	+100	+1.9%
199	SR 199	James City CL	SR 31 - Jamestown Rd	37,160	36,498	35,623	36,257	2/2-2/3	34,000	35,000	33,000	36,000	+2,000	+5.9%
199	SR 199	SR 31 - Jamestown Rd	James City CL	37,015	36,180	37,165	36,971	2/2-2/3	36,000	36,000	34,000	36,000	0	0.0%
7079	Second St	Page St	Parkway Dr	13,557	13,965	12,995	13,989	7/13-7/14	13,000	13,000	12,000	13,000	0	0.0%
7079	Second St	Parkway Dr	York CL	15,207	15,123	14,031	14,652	7/13-7/14	13,000	14,000	13,000	14,000	+1,000	+7.7%
60	York St	Lafayette St	James City CL	10,850	13,385	12,201	12,774	7/27-7/28	9,900	13,000	12,000	12,000	+2,100	+21.2%

YORK COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume 2007	2010	2013	2016	2016 Count Date	Annual Average Daily Traffic (AADT) 2007	2010	2013	2016	Change in AADT 2007 to 2016	
645	Airport Rd	Rte 603 - Mooretown Rd	Rte 749	-	5,022	5,110	5,489	12/7-12/8	5,100	5,000	5,100	5,400	+300	+5.9%
645	Airport Rd	Rte 749	Rte 737 - Waller Mill Park	-	5,447	5,478	5,435	11/30-12/1	5,400	5,400	5,500	5,400	0	0.0%
645	Airport Rd	Rte 737 - Waller Mill Park	FR-137 - Rochambeau Dr	-	5,572	5,642	5,422	12/7-12/8	5,700	5,600	5,600	5,300	-400	-7.0%
1012	Alexander Hamilton Blvd	US 17 - GW Mem Hwy	Rte 1020 - Ballard St	-	1,325	1,339	1,036	11/30-12/1	1,300	1,300	1,300	1,000	-300	-23.1%
1020	Ballard St	Water St	Colonial Pkwy	1,760	1,960	2,025	1,952	7/12-8/25	1,500	1,800	1,900	1,800	+300	+20.0%
1020	Ballard St	Colonial Pkwy	SR 238 - Cook Rd	4,940	5,899	5,473	6,866	7/12-7/13	4,300	5,400	5,200	6,700	+2,400	+55.8%
238	Ballard St	SR 238 - Cook Rd	Moore House Rd	-	3,329	3,357	3,300	7/12-7/13	2,600	3,000	3,100	3,200	+600	+23.1%
238	Ballard St	Moore House Rd	Coast Guard Training Center	2,967	2,430	2,900	2,776	7/12-7/13	2,600	2,200	2,700	2,600	0	0.0%
604	Barlow Rd	Rochambeau Dr	Rte 602 - Fenton Mill Rd	1,511	-	1,489	1,521	3/22	1,500	1,500	1,500	1,500	0	0.0%
604	Barlow Rd	Rte 602 - Fenton Mill Rd	Rte 646 - Newman Rd	-	1,417	1,427	1,440	3/22	1,400	1,400	1,400	1,400	0	0.0%
600	Big Bethel Rd	Hampton CL	SR 134 - Hampton Hwy	10,847	9,444	11,852	9,210	6/28-6/29	9,600	8,600	11,000	8,500	-1,100	-11.5%
600	Big Bethel Rd	SR 134 - Hampton Hwy	SR 171 - Victory Blvd	6,359	4,971	5,211	4,817	6/28-6/29	5,600	4,500	4,900	4,400	-1,200	-21.4%

FIGURE 5 (CONTINUED) – WEEKDAY AND ANNUAL AVERAGE DAILY TRAFFIC VOLUMES, 2007 TO 2016

Data source: VDOT. '-' indicates data is not available for that roadway segment and year.

YORK COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume 2007	2010	2013	2016	2016 Count Date	Annual Average Daily Traffic (AADT) 2007	2010	2013	2016	Change in AADT 2007 to 2016	
60	Bypass Rd	Williamsburg CL	SR 132	21,128	26,802	24,178	26,368	7/12-7/14	20,000	25,000	23,000	25,000	+5,000	+25.0%
143	Capitol Landing Rd	Williamsburg CL	SR 132	9,643	9,226	9,168	9,523	6/21-6/22	8,500	8,700	8,700	9,300	+800	+9.4%
143	Capitol Landing Rd	SR 132	I-64	17,947	19,138	18,870	19,146	6/21-6/22	16,000	18,000	18,000	19,000	+3,000	+18.8%
143	Capitol Landing Rd	I-64	Camp Peary Main Gate	3,509	2,668	-	2,614	6/21-6/22	3,200	2,500	2,600	2,500	-700	-21.9%
782	Carys Chapel Rd	Poquoson CL	SR 171 - Victory Blvd	5,681	5,155	4,708	4,509	6/28-6/29	5,000	4,700	4,400	4,100	-900	-18.0%
90003	Colonial Pkwy	Williamsburg CL	Ballard St	6,218	-	-	-	-	5,700	6,000	6,000	6,000	+300	+5.3%
704	Cook Rd	US 17 - GW Mem Hwy	Rte 634 - Old York Hampton Hwy	5,719	5,354	5,258	5,734	7/12-7/13	5,000	4,900	5,000	5,400	+400	+8.0%
704	Cook Rd	Rte 634 - Old York Hampton Hwy	Rte 634 - Surrender Rd North	6,234	6,368	6,256	7,287	7/12-7/13	5,600	5,800	5,900	6,800	+1,200	+21.4%
704	Cook Rd	Rte 634 - Surrender Rd North	SR 238 - Goosley Rd	6,671	6,125	5,910	7,376	7/12-7/13	5,700	6,300	5,500	7,200	+1,500	+26.3%
238	Cook Rd	SR 238 - Goosley Rd	Ballard St	6,500	6,658	7,330	8,102	7/12-7/13	5,700	6,300	6,400	7,700	+2,000	+35.1%
1763	Coventry Blvd	US 17 - GW Mem Hwy	Rte 1840 - Bridge Wood Dr	-	5,992	6,012	6,911	11/29-11/30	6,000	6,000	6,000	6,900	+900	+15.0%
1763	Coventry Blvd	Rte 1840 - Bridge Wood Dr	Rte 1766 - Peachtree Court	-	-	5,655	5,521	12/7-12/8	5,600	5,600	5,600	5,500	-100	-1.8%
1763	Coventry Blvd	Rte 1766 - Peachtree Court	Rte 1764 - Blackberry Bend	-	4,687	4,709	4,129	11/29-11/30	4,800	4,700	4,700	4,100	-700	-14.6%
1763	Coventry Blvd	Rte 1764 - Blackberry Bend	Rte 1745 - Honeysuckle Lane	-	4,572	4,577	4,358	12/7-12/8	4,600	4,600	4,600	4,300	-300	-6.5%
1763	Coventry Blvd	Rte 1745 - Honeysuckle Lane	Rte 1750 - Owen Davis Blvd	-	2,962	3,045	3,801	11/29-11/30	2,800	3,000	3,000	3,800	+1,000	+35.7%
621	Dare Rd	US 17 - GW Mem Hwy	Rte 620 - Lakeside Dr	4,273	4,946	4,977	4,816	6/29-6/30	3,800	4,500	4,600	4,400	+600	+15.8%
173	Denbigh Blvd	Newport News CL	US 17 - GW Mem Hwy	16,509	16,203	15,929	16,861	All 2016	16,000	15,000	15,000	16,000	0	0.0%
782	E Yorktown Rd	SR 171 - Victory Blvd	Poquoson CL	5,681	5,585	5,787	5,705	6/28-6/29	5,000	5,100	5,500	5,200	+200	+4.0%
105	Fort Eustis Blvd	Newport News CL	US 17 - GW Mem Hwy	17,469	-	17,203	18,504	All 2016	16,000	15,000	15,000	17,000	+1,000	+6.3%
1050	Fort Eustis Blvd Ext	US 17 - GW Mem Hwy	Rte 634 - Old York Hampton Hwy	-	3,312	3,322	3,462	11/29-11/30	3,200	3,300	3,300	3,500	+300	+9.4%
17	GW Mem Hwy	Newport News CL	SR 171 - Victory Blvd	37,917	38,983	35,050	34,018	6/21-6/22	35,000	35,000	31,000	31,000	-4,000	-11.4%
17	GW Mem Hwy	SR 171 - Victory Blvd	SR 134 - Hampton Hwy	41,992	42,347	38,592	36,740	1/17-1/19	39,000	38,000	34,000	35,000	-4,000	-10.3%
17	GW Mem Hwy	SR 134 - Hampton Hwy	Rte 621 - Grafton Dr	56,977	54,914	-	48,876	6/21-6/22	53,000	51,000	50,000	44,000	-9,000	-17.0%
17	GW Mem Hwy	Rte 621 - Grafton Dr	SR 173 - Denbigh Blvd	39,975	39,235	37,878	-	-	37,000	35,000	34,000	34,000	-3,000	-8.1%
17	GW Mem Hwy	SR 173 - Denbigh Blvd	SR 105 - Fort Eustis Blvd	38,995	39,111	36,726	36,487	6/21-6/22	36,000	35,000	33,000	33,000	-3,000	-8.3%
17	GW Mem Hwy	SR 105 - Fort Eustis Blvd	Rte 704 - Cook Rd	38,170	38,988	34,284	36,373	6/21-6/22	35,000	35,000	32,000	33,000	-2,000	-5.7%
17	GW Mem Hwy	Rte 704 - Cook Rd	SR 238 - Goosley Rd	28,938	29,384	35,113	27,147	6/21-6/22	27,000	27,000	32,000	25,000	-2,000	-7.4%
17	GW Mem Hwy	SR 238 - Goosley Rd	Colonial Pkwy	29,300	30,836	28,282	29,398	6/21-6/22	27,000	28,000	25,000	27,000	0	0.0%
17	GW Mem Hwy	Colonial Pkwy	Mathew St	31,764	34,117	34,432	34,210	6/21-6/22	30,000	31,000	31,000	31,000	+1,000	+3.3%
17	GW Mem Hwy	Mathew St	Gloucester CL	35,778	34,051	33,384	34,401	All 2016	34,000	32,000	31,000	32,000	-2,000	-5.9%
173	Goodwin Neck Rd	US 17 - GW Mem Hwy	Rte 630 - Wolf Trap Rd	10,528	9,318	9,576	9,970	6/29-6/30	9,300	8,500	8,900	9,000	-300	-3.2%
173	Goodwin Neck Rd	Rte 630 - Wolf Trap Rd	Back Creek Rd	5,222	3,811	4,811	2,964	6/29-7/28	4,600	3,500	4,500	2,700	-1,900	-41.3%
173	Goodwin Neck Rd	Back Creek Rd	Dandy Loop Rd	1,602	2,299	1,968	1,838	6/29-6/30	1,400	2,100	1,800	1,700	+300	+21.4%
238	Goosley Rd	SR 238 - Old Williamsburg Rd	US 17 - GW Mem Hwy	6,809	6,878	6,436	6,501	6/22-6/23	6,000	6,300	6,000	5,900	-100	-1.7%
238	Goosley Rd	US 17 - GW Mem Hwy	Rte 704 - Cook Rd	1,668	1,690	1,530	1,558	6/22-6/23	1,500	1,600	1,400	1,500	0	0.0%
134	Hampton Hwy	US 17 - GW Mem Hwy	SR 171 - Victory Blvd	21,843	21,178	18,435	16,657	6/28-6/29	19,000	19,000	17,000	15,000	-4,000	-21.1%
134	Hampton Hwy	SR 171 - Victory Blvd	Rte 600 - Big Bethel Rd	29,902	29,041	25,607	24,453	6/28-6/29	26,000	26,000	24,000	22,000	-4,000	-15.4%
134	Hampton Hwy	Rte 600 - Big Bethel Rd	Hampton CL	30,486	27,101	26,040	23,632	6/28-6/29	27,000	25,000	24,000	22,000	-5,000	-18.5%
718	Hornsbyville Rd	Rte 634 - Old York Hampton Hwy	Rte 631 - Waterview Rd	3,396	3,021	2,730	3,199	7/12-7/13	3,000	2,800	2,600	3,000	0	0.0%
718	Hornsbyville Rd	Rte 631 - Waterview Rd	SR 173 - Goodwin Neck Rd	1,764	1,553	1,453	1,387	7/12-7/13	1,600	1,400	1,400	1,300	-300	-18.8%
716	Hubbard Ln	Rte 641 - Penniman Rd	Lakeshead Dr	5,425	5,413	4,726	4,615	6/21-6/22	4,800	4,900	4,300	4,200	-600	-12.5%
64	I-64	James City CL	SR 199/Rte 646 - Newman Rd	62,101	58,252	59,067	64,620	All 2016	63,000	64,000	65,000	70,000	+7,000	+11.1%
64	I-64	SR 199/Rte 646 - Newman Rd	SR 143 - Camp Peary Rd	56,042	56,909	56,226	60,262	All 2016	61,000	61,000	61,000	65,000	+4,000	+6.6%
64	I-64	SR 143 - Camp Peary Rd	SR 199	64,079	65,349	57,304	65,418	All 2016	60,000	63,000	59,000	69,000	+9,000	+15.0%
64	I-64	SR 199	Busch Gardens Interchange	81,028	83,621	76,126	81,291	All 2016	78,000	81,000	78,000	84,000	+6,000	+7.7%
64	I-64	Busch Gardens Interchange	James City CL	86,497	87,885	83,803	84,322	All 2016	78,000	82,000	79,000	87,000	+9,000	+11.5%
1800	Kiln Creek Pkwy	ECL Newport News; Edgewater Dr	NCL Newport News; Shoreline Pt	-	4,237	4,319	8,584	11/29-11/30	4,200	4,200	4,300	8,600	+4,400	+104.8%
620	Lakeside Dr	US 17 - GW Mem Hwy	Rte 614 - Showalter Rd	8,969	9,392	8,557	8,983	7/12-7/13	7,900	8,600	8,000	8,300	+400	+5.1%

FIGURE 5 (CONTINUED) – WEEKDAY AND ANNUAL AVERAGE DAILY TRAFFIC VOLUMES, 2007 TO 2016

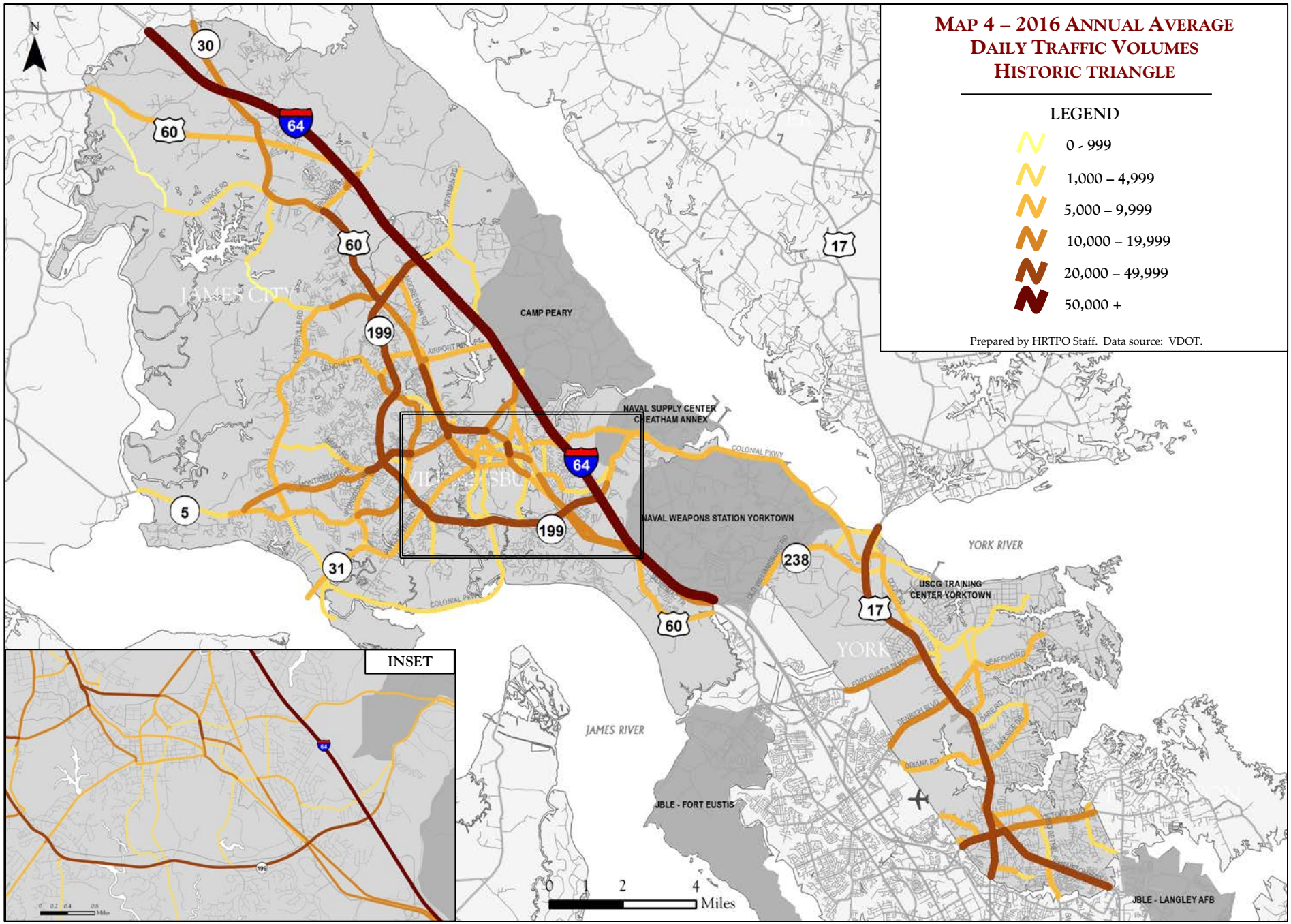
Data source: VDOT. '-' indicates data is not available for that roadway segment and year.

YORK COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume 2007	2010	2013	2016	2016 Count Date	Annual Average Daily Traffic (AADT) 2007	2010	2013	2016	Change in AADT 2007 to 2016	
620	Lakeside Dr	Rte 614 - Showalter Rd	Rte 621 - Dare Rd	4,402	4,514	4,755	5,820	7/12-7/13	3,900	4,100	4,400	5,400	+1,500	+38.5%
646	Lightfoot Rd	US 60 - Richmond Rd	Mooretown Rd	10,166	10,211	10,249	9,878	6/21-6/22	9,400	9,700	9,800	9,600	+200	+2.1%
1001	Mathews St	US 17 - GW Mem Hwy	Water St	3,609	4,069	3,829	3,240	6/22-6/23	3,200	3,700	3,600	2,900	-300	-9.4%
143	Merrimac Trail	Busch Gardens Interchange	SR 199	16,875	14,675	18,641	17,754	6/22-7/13	15,000	13,000	17,000	16,000	+1,000	+6.7%
143	Merrimac Trail	Penniman Rd	Second St	16,543	-	8,618	-	-	7,600	7,300	7,400	7,000	-600	-7.9%
143	Merrimac Trail	Second St	Williamsburg CL	8,640	7,936	8,000	7,575	6/21-6/22	7,600	7,300	7,400	7,000	-600	-7.9%
603	Mooretown Rd	Rte 713 - Waller Mill Rd	Rte 645 - Airport Rd	5,822	6,289	5,885	6,232	6/21-6/22	5,400	6,000	5,600	5,700	+300	+5.6%
603	Mooretown Rd	Rte 645 - Airport Rd	SR 199	8,651	9,283	9,024	9,091	6/21-6/22	7,900	8,800	8,600	8,400	+500	+6.3%
603	Mooretown Rd	SR 199	Rte 646 - Lightfoot Rd	-	-	-	-	-	-	-	-	-	-	-
646	Newman Rd	I-64	James City CL	2,755	2,859	2,955	2,880	6/21-6/22	2,500	2,700	2,800	2,800	+300	+12.0%
238	Old Williamsburg Rd	Newport News CL	Rte 660 - Baptist Rd	10,769	11,158	9,681	9,533	All 2016	9,400	9,600	8,600	8,500	-900	-9.6%
238	Old Williamsburg Rd	Rte 660 - Baptist Rd	SR 238 - Goosley Rd	9,244	9,833	9,179	9,381	6/22-6/23	8,200	8,900	8,600	8,500	+300	+3.7%
1020	Old Williamsburg Rd	SR 238 - Goosley Rd	Colonial Pkwy	2,590	3,013	3,017	3,104	6/22-6/23	2,300	2,700	2,800	2,800	+500	+21.7%
634	Old York Hampton Hwy	US 17 - GW Mem Hwy	Rte 1050 - Fort Eustis Blvd Ext	4,033	4,126	4,106	4,576	7/12-7/13	3,600	3,800	3,800	4,300	+700	+19.4%
634	Old York Hampton Hwy	Rte 1050 - Fort Eustis Blvd Ext	Rte 718 - Hornsbyville Rd	2,627	2,774	2,838	2,809	7/12-7/13	2,300	2,600	2,700	2,600	+300	+13.0%
718	Old York Hampton Hwy	Rte 718 - Hornsbyville Rd	Battle Rd	5,420	4,817	4,199	4,846	7/12-7/13	4,800	4,400	3,900	4,600	-200	-4.2%
634	Old York Hampton Hwy	Battle Rd	Rte 693 - Wormley Creek Dr	4,745	4,157	3,712	4,490	7/12-7/13	4,200	3,800	3,500	4,200	0	0.0%
634	Old York Hampton Hwy	Rte 693 - Wormley Creek Dr	Rte 704 - Cook Rd	3,563	2,868	2,833	3,223	7/12-7/13	3,200	2,700	2,700	3,000	-200	-6.3%
620	Oriana Rd	Newport News CL	US 17 - GW Mem Hwy	6,234	6,037	6,643	6,444	7/12-7/13	5,500	5,500	6,300	6,000	+500	+9.1%
641	Penniman Rd	Williamsburg CL	SR 143 - Merrimac Trail	2,436	2,810	2,913	3,146	6/21-6/22	2,200	2,600	2,700	2,900	+700	+31.8%
641	Penniman Rd	SR 143 - Merrimac Trail	Fillmore Dr	6,294	6,087	6,078	6,293	6/21-6/22	5,600	5,600	5,700	5,800	+200	+3.6%
641	Penniman Rd	Fillmore Dr	SR 199	2,152	2,879	2,520	6,106	6/21-6/22	1,900	2,600	2,300	2,600	+700	+36.8%
641	Penniman Rd	SR 199	Colonial Pkwy	5,534	5,479	6,009	6,395	All 2016	4,900	4,900	5,200	5,500	+600	+12.2%
60	Pocahontas Trail	SR 199	James City CL	10,726	11,459	11,143	12,840	6/22-6/23	9,600	10,000	11,000	12,000	+2,400	+25.0%
137	Rochambeau Dr	SC-9500 Bruton High School Exit	SR 143 Capitol Landing Rd	9,213	-	9,220	9,993	11/30-12/1	9,200	9,200	9,200	10,000	+800	+8.7%
132	SR 132	US 60 - Bypass Rd	SR 143 - Capitol Landing Rd	8,737	11,135	10,165	10,521	6/21-6/22	8,300	9,400	8,700	10,000	+1,700	+20.5%
199	SR 199	I-64	Rte 603 - Mooretown Rd	25,199	29,588	29,687	25,666	2/3-2/4	23,000	24,000	25,000	25,000	+2,000	+8.7%
199	SR 199	Rte 603 - Mooretown Rd	US 60 - Richmond Rd/JCC CL	24,536	27,033	26,986	24,658	2/3-2/4	22,000	22,000	22,000	24,000	+2,000	+9.1%
199	SR 199	SR 143 - Merrimac Trail/JCC CL	I-64	30,529	30,753	30,661	30,857	All 2016	27,000	28,000	28,000	28,000	+1,000	+3.7%
199	SR 199	I-64	Marquis Pkwy	10,826	20,012	18,133	18,883	8/17-8/18	9,500	16,000	15,000	16,000	+6,500	+68.4%
199	SR 199	Marquis Pkwy	Rte 641 - Penniman Rd	7,896	9,598	9,055	9,572	6/21-6/22	7,100	7,800	7,500	8,400	+1,300	+18.3%
622	Seaford Rd	SR 173 - Goodwin Neck Rd	Ellerson Ct	9,413	9,128	8,157	9,010	6/29-6/30	8,300	8,300	7,600	8,100	-200	-2.4%
622	Seaford Rd	Ellerson Ct	Rte 718 - Back Creek Rd	6,732	6,855	6,047	6,611	6/29-6/30	5,900	6,300	5,600	6,000	+100	+1.7%
622	Seaford Rd	Rte 718 - Back Creek Rd	Rte 787 - W. Old Seaford Rd	-	2,212	2,226	2,534	11/29-11/30	2,100	2,200	2,200	2,500	+400	+19.0%
622	Seaford Rd	Rte 787 - W. Old Seaford Rd	Rte 623 - Wildey Rd	-	1,249	1,255	1,243	12/7-12/8	1,200	1,200	1,300	1,200	0	0.0%
622	Seaford Rd	Rte 623 - Wildey Rd	Rte 670 - Hansford Lane	-	788	810	873	12/7-12/8	760	790	810	860	+100	+13.2%
162	Second St	Williamsburg CL	SR 143 - Merrimac Trail	15,207	15,123	14,031	14,652	7/13-7/14	13,000	14,000	13,000	14,000	+1,000	+7.7%
171	Victory Blvd	Newport News CL	US 17 - GW Mem Hwy	50,111	52,998	48,289	40,051	6/21-6/22	43,000	49,000	46,000	37,000	-6,000	-14.0%
171	Victory Blvd	US 17 - George Washington Hwy	SR 134 - Hampton Hwy	32,291	33,648	29,985	31,361	6/28-7/28	28,000	31,000	28,000	29,000	+1,000	+3.6%
171	Victory Blvd	SR 134 - Hampton Hwy	Rte 600 - Big Bethel Rd	19,853	20,304	19,649	19,397	6/28-6/29	17,000	19,000	19,000	18,000	+1,000	+5.9%
171	Victory Blvd	Rte 600 - Big Bethel Rd	Poquoson CL	20,895	21,568	20,022	20,038	6/28-6/29	18,000	20,000	19,000	18,000	0	0.0%
713	Waller Mill Rd	US 60 - Bypass Rd	Rte 643 - Caran Rd	4,572	4,634	4,310	4,679	6/21-6/22	4,000	4,300	4,100	4,300	+300	+7.5%
1020	Water St	Colonial Pkwy	Ballard St	5,040	5,179	4,744	3,732	6/22-6/23	4,100	4,700	4,500	3,400	-700	-17.1%
630	Wolf Trap Rd	US 17 - GW Mem Hwy	SR 173 - Goodwin Neck Rd	8,740	8,219	7,761	6,888	6/29-6/30	7,700	7,500	7,200	6,200	-1,500	-19.5%
630	Wolf Trap Rd	SR 173 Goodwin Neck Rd	Rte 718 - Hornsbyville Rd	-	1,926	1,937	2,655	11/29-11/30	1,800	1,900	1,900	2,700	+900	+50.0%
706	Yorktown Rd	SR 134 Hampton Hwy	Rte 735 - Greenland Dr	-	6,219	6,239	6,172	4/27	6,300	6,200	6,200	6,200	-100	-1.6%
706	Yorktown Rd	Rte 735 - Greenland Dr	Rte 600 - Big Bethel Rd	-	4,701	4,750	4,762	4/27	4,600	4,700	4,800	4,800	+200	+4.3%

FIGURE 5 (CONTINUED) – WEEKDAY AND ANNUAL AVERAGE DAILY TRAFFIC VOLUMES, 2007 TO 2016

Data source: VDOT. '-' indicates data is not available for that roadway segment and year.


MAP 4 – 2016 ANNUAL AVERAGE DAILY TRAFFIC VOLUMES HISTORIC TRIANGLE
LEGEND
0 - 999
1,000 – 4,999
5,000 – 9,999
10,000 – 19,999
20,000 – 49,999
50,000 +
Prepared by HRTPO Staff. Data source: VDOT.
N
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
INSET
0 1 2 4 Miles

Roadway Congestion

The roadway congestion analysis performed for this study is similar to the procedure used in the HRTPO Congestion Management Process (CMP).[2] In the Congestion Management Process, weekday peak period congestion levels are determined for each roadway segment that comprises the CMP Roadway Network, which includes all roadways classified as minor arterials and above, as well as selected collectors. Roadway segment congestion levels are determined using either averaged speed data or Highway Capacity Manual (HCM) traffic volume-based level of service methods for roadways where speed data is not available.

The travel time and speed data used in this analysis was collected by INRIX. INRIX collects travel time and speed data on a continuous basis, using millions of GPS-enabled fleet vehicles (taxis, airport shuttles, service vehicles, and long haul trucks), mobile devices that have INRIX's real-time traffic applications installed, traditional road sensors, and other sources. This data has been purchased by VDOT and access is provided to Metropolitan Planning Organizations throughout the state.

Congestion levels for roadways in the Historic Triangle where INRIX speed data is available were determined based on the travel time index (TTI). The TTI represents the ratio of the actual travel time during the peak hour to the travel time in free-flow conditions. For example, a TTI of 1.20 means a trip that takes 20 minutes under free-flow conditions takes 24 minutes (20% longer) in the peak hour.

HRTPO staff calculated the travel time index for each roadway segment by direction for each 15-minute interval during the AM and PM Peak Periods in 2017. The highest 15-minute travel time index during the AM Peak Period (defined as occurring between 5:00 am and 9:00 am) and the PM Peak Period (defined as occurring between 3:00 pm and 7:00 pm) was used to determine each roadway segment's peak period congestion level.

Each roadway segment was classified as having a "low", "moderate", or "severe" level of peak period congestion based on this highest travel time index, using the thresholds shown in the following table.

Congestion Levels for Roadways with Speed Data

Congestion Level		Freeway	Arterial
Low	LOW	TTI < 1.15	TTI < 1.25
Moderate	MOD	1.15 ≤ TTI < 1.3	1.25 ≤ TTI < 1.4
Severe	SEV	TTI ≥ 1.3	TTI ≥ 1.4

Congestion levels for roadways without INRIX speed data were determined using traffic volumes and Highway Capacity Manual[3] (HCM) level of service (LOS) methods. The HCM is a widely accepted engineering standard. The HCM describes LOS as a measure of operating conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

[2] *Hampton Roads Congestion Management Process: System Performance and Mitigation Report*, HRTPO, October 2014.

[3] *Highway Capacity Manual, 6th Edition*, Transportation Research Board, 2016.

Level of Service is categorized on a scale from LOS A through LOS F, with LOS A representing the best operating conditions and LOS F representing the most congested conditions (**Figure 6**). Levels of Service A through D are considered to be acceptable operating conditions, while Levels of Service E and F (shown in red in the congestion maps) are considered unacceptable operating conditions with severe congestion. LOS D is the "warning" level where favorable conditions are on the verge of becoming unacceptable.

CONGESTION LEVELS FOR ROADWAYS WITHOUT SPEED DATA

Congestion Level		HCM LOS
Low	LOW	A-C
Moderate	MOD	D
Severe	SEV	E-F

Congestion levels for roadways in the Historic Triangle without INRIX speed data were calculated for both the AM Peak Period and PM Peak Period using weekday traffic volume data collected most recently by VDOT in 2016. This analysis was done using the LOSPLAN software package[4] produced by the Florida Department of Transportation. The LOSPLAN software uses HCM methods to calculate Levels of Service based on various roadway and traffic characteristics. Congestion levels for each roadway segment were determined for the hour with the highest traffic volume during the AM Peak Period (which is defined as the highest volume of weekday traffic in four consecutive 15-minute periods between 5 and 9 am) and the PM Peak Period (between 3 pm and 7 pm).

Figure 8 on pages 17-20 shows the existing congestion levels during the AM Peak Period and PM Peak Period for roadways in the Historic Triangle that are part of the regional CMP Roadway Network. These congestion levels are also shown on **Maps 5-6** on pages 24-25, and congestion maps for each locality are also included in **Appendix X**. Finally, travel time information for roadways with

[4] LOSPLAN Software, Florida Department of Transportation, 2009. Information on LOSPLAN Software is available at http://www.dot.state.fl.us/planning/systems/sm/los.

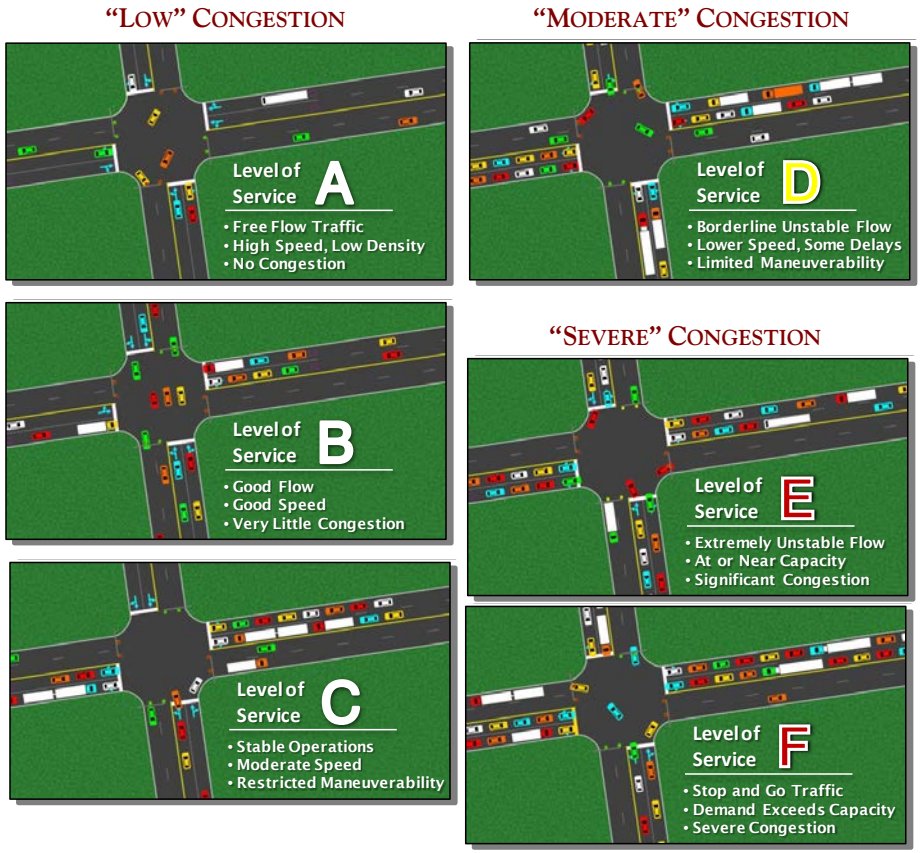


FIGURE 6 – LEVEL OF SERVICE DEFINITIONS
Source: HRTPO Congestion Management Process report.

INRIX data, including speeds, travel time indices (TTIs), and duration of congestion, is included in **Figure 9** on pages 21-22.

There are 8 roadway segments in the Historic Triangle that currently operate under severely congested conditions during the AM Peak Period and 25 segments during the PM Peak Period. Most of the congested roadways are in York County, including sections of George Washington Memorial Highway, Hampton Highway, and Victory Boulevard. Sections of Centerville Road, Longhill Road, Monticello Avenue, and Route 199 are severely congested in James

City County, as are sections of Route 199 and Jamestown Road in Williamsburg.

Looking at roadways with INRIX speed data available, the segment in the Historic Triangle that is the most congested based on the travel time index is Route 199 Eastbound between John Tyler Highway and Jamestown Road in James City County and Williamsburg. This segment has a PM Peak Period TTI of 2.32, meaning the slowest travel times during the PM Peak Period are 2.32 times longer than during uncongested conditions. The next most congested segments are Route 60 Westbound in James City County between Route 199 and Centerville Road (PM TTI=2.06), Route 17 Northbound in York County between the Newport News CL and Victory Boulevard (PM TTI=2.04), Victory Boulevard Eastbound in York County between Hampton Highway and Big Bethel Road (PM TTI=1.79), and Victory Boulevard Eastbound in York County between Newport News CL and Route 17 (PM TTI=1.76).

A total of 14 lane-miles[5] of the Historic Triangle's CMP roadway network is severely congested during the AM Peak Period (**Figure 7**). This comprises just over 2% of the major roadway lane-miles in the area. York County has the highest percentage of severely congested roadways at 5% of the locality's CMP roadway network lane-miles, followed by 3% in Williamsburg and less than 1% in James City County.

In the PM Peak Period, 48 lane-miles of major roadways (8%) in the Historic Triangle are severely congested. Similar to the AM Peak Period, York County has the highest percentage of severely congested conditions in the PM Peak Period at 9% of the locality's CMP roadway network lane-miles, followed by 8% in James City County and 5% in Williamsburg.

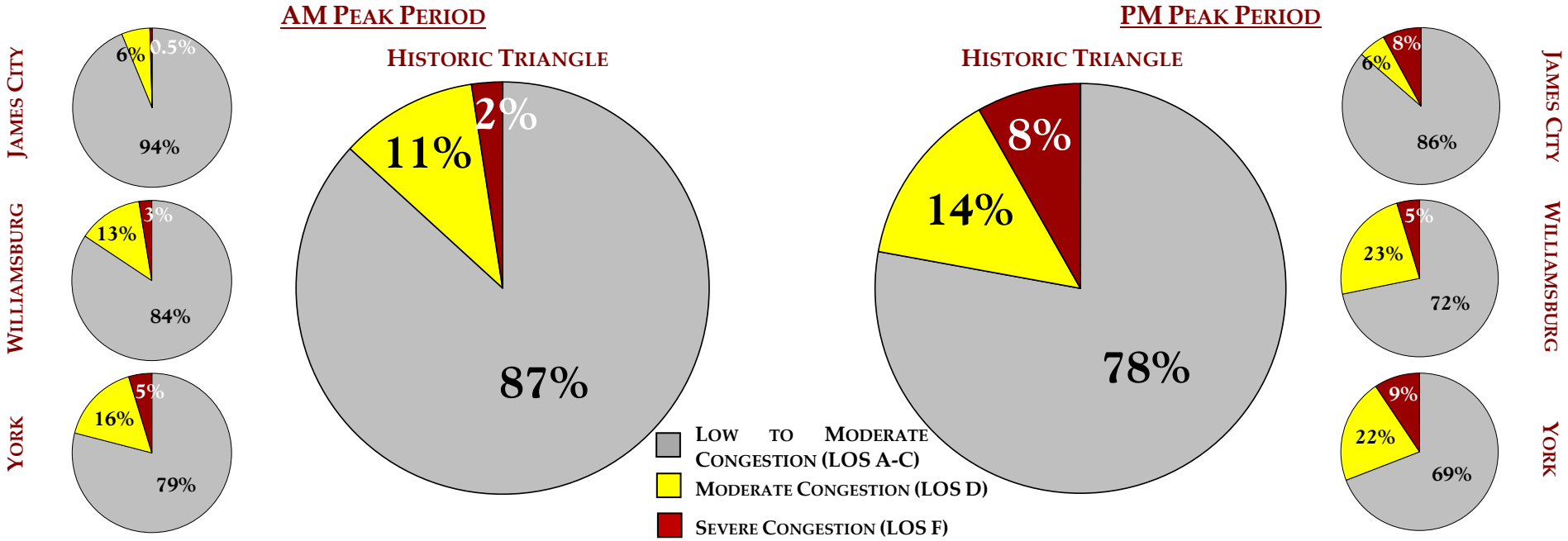


FIGURE 7 – PEAK PERIOD CONGESTION LEVELS BY LANE-MILE IN THE HISTORIC TRIANGLE, 2017

Source: HRTPO. Only includes those roadways in the regional CMP roadway network.

[5] A lane-mile is defined as the length of a roadway segment multiplied by the number of lanes. A one-mile long, four-lane wide roadway segment would comprise four lane-miles.

JAMES CITY COUNTY

Route Num	Location	Segment From	Segment To	Existing Peak Period Congestion Level			
				AM		PM	
				NB/EB	SB/WB	NB/EB	SB/WB
645	Airport Rd	US 60 - Richmond Rd	Rte 603 - Mooretown Road	LOW		MOD	
30	Barhamsville Rd	I-64	US 60 - Richmond Rd	LOW	LOW	LOW	LOW
614	Centerville Rd	SR 5 - John Tyler Hwy	Rte 5000 - Monticello Ave	LOW		LOW	
614	Centerville Rd	Rte 5000 - Monticello Ave	Rte 613 - News Road	LOW		LOW	
614	Centerville Rd	Rte 613 - News Road	Rte 612 - Longhill Rd	LOW		LOW	
614	Centerville Rd	Rte 612 - Longhill Rd	US 60 - Richmond Rd	LOW		SEV	
-	Colonial Pkwy	Jamestown Visitor Center	Williamsburg CL	LOW		LOW	
607	Croaker Rd	US 60 - Richmond Rd	Rte 760 - Maxton Ln	LOW		MOD	
607	Croaker Rd	Rte 760 - Maxton Ln	I-64	LOW		LOW	
607	Croaker Rd	I-64	Rte 602 - Fenton Mill Rd	LOW		LOW	
607	Croaker Rd	Rte 602 - Fenton Mill Rd	Rte 606 - Riverview Rd	LOW		LOW	
615	Depue Dr	Rte 615 - Ironbound Rd	Rte 612 - Longhill Rd	LOW		LOW	
64	I-64	New Kent CL	SR 30 - Old Stage Rd	LOW	LOW	LOW	LOW
64	I-64	SR 30 - Old Stage Rd	Rte 607 - Croaker Rd	LOW	LOW	LOW	LOW
64	I-64	Rte 607 - Croaker Rd	York CL	LOW	LOW	LOW	LOW
64	I-64	York CL	SR 143 Merrimac Trail/NN CL	MOD	LOW	MOD	MOD
615	Ironbound Rd/Sandy Bay Rd	SR 31 - Jamestown Rd	SR 5 - John Tyler Hwy	MOD	LOW	LOW	LOW
615	Ironbound Rd/News Rd	SR 5 - John Tyler Hwy	SR 321 - Monticello Ave	LOW	LOW	LOW	LOW
615	Ironbound Rd	Rte 616 - Strawberry Plains Rd	SR 321 - Monticello Ave	LOW		LOW	
615	Ironbound Rd	SR 321 - Monticello Ave	Williamsburg CL	LOW		LOW	
31	Jamestown Rd	Jamestown Ferry	Rte 614 - Greensprings Rd	MOD		MOD	
31	Jamestown Rd	Rte 614 - Greensprings Rd	Rte 681 - Sandy Bay Rd	LOW	MOD	LOW	LOW
31	Jamestown Rd	Rte 681 - Sandy Bay Rd	Rte 682 - Neck-O-Land Rd	LOW	LOW	LOW	LOW
31	Jamestown Rd	Rte 682 - Neck-O-Land Rd	Williamsburg CL	LOW	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Charles City CL	Rte 5000 - Monticello Ave	LOW	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Rte 5000 - Monticello Ave	Rte 614 - Centerville Rd	LOW	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Rte 614 - Centerville Rd	Rte 615 - Ironbound Rd	LOW	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Rte 615 - Ironbound Rd	Rte 652 - Stanley Dr	LOW	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Rte 652 - Stanley Dr	SR 199	LOW	LOW	LOW	LOW
612	Longhill Rd	Rte 614 - Centerville Rd	Rte 658 - Olde Towne Rd	LOW		LOW	
612	Longhill Rd	Rte 658 - Olde Towne Rd	SR 199	LOW		SEV	
612	Longhill Rd	SR 199	Rte 615 - Depue Dr	LOW		LOW	
143	Merrimac Trail	Newport News CL	York CL (South of Busch Gardens)	LOW	LOW	LOW	LOW
143	Merrimac Trail	SR 199/York CL	Rte 641 - Penniman Rd/York CL	LOW	LOW	LOW	LOW
5000	Monticello Ave	SR 5 - John Tyler Hwy	Rte 614 - Centerville Rd	LOW		MOD	
5000	Monticello Ave	Rte 614 - Centerville Rd	Rte 613 - News Road	LOW		LOW	
5000	Monticello Ave	Rte 613 - News Road	SR 199	LOW		SEV	
321	Monticello Ave	SR 199	Rte 615 - Ironbound Rd	LOW		SEV	
30	Old Stage Hwy	New Kent CL	Rte 601 - Barnes Rd	LOW	LOW	LOW	LOW
30	Old Stage Hwy	Rte 601 - Barnes Rd	I-64	LOW	LOW	LOW	LOW
658	Olde Towne Rd	Rte 612 - Longhill Rd	US 60 - Richmond Rd	LOW		LOW	
60	Pocahontas Trail	Williamsburg CL	SR 199/York CL	LOW	LOW	LOW	LOW
60	Pocahontas Trail	York CL	BASF Rd	LOW	LOW	LOW	LOW
60	Pocahontas Trail	BASF Rd	Newport News CL	LOW	LOW	LOW	LOW
60	Richmond Rd	New Kent CL	SR 30 - Barhamsville Rd	LOW	LOW	LOW	LOW
60	Richmond Rd	SR 30 - Barhamsville Rd	Rte 607 - Croaker Rd	LOW	LOW	LOW	LOW
60	Richmond Rd	Rte 607 - Croaker Rd	Rte 646 - Lightfoot Rd	LOW	LOW	LOW	LOW
60	Richmond Rd	Rte 646 - Lightfoot Rd	Rte 614 - Centerville Rd	LOW	LOW	LOW	LOW
60	Richmond Rd	Rte 614 - Centerville Rd	SR 199	MOD	SEV	SEV	SEV
60	Richmond Rd	SR 199	Rte 658 - Olde Towne Rd	LOW	LOW	LOW	LOW

FIGURE 8 – EXISTING WEEKDAY PEAK PERIOD CONGESTION LEVELS

Source: HRTPO.

JAMES CITY COUNTY

Route Num	Location	Segment From	Segment To	Existing Peak Period Congestion Level			
				AM		PM	
				NB/EB	SB/WB	NB/EB	SB/WB
60	Richmond Rd	Rte 658 - Olde Towne Rd	Williamsburg CL	LOW	LOW	LOW	LOW
30	Rochambeau Dr	US 60 - Richmond Rd	0.7 mi east of Ashington Way	LOW	LOW	LOW	LOW
30	Rochambeau Dr	0.7 mi east of Ashington Way	Rte 607 - Croaker Rd	LOW	LOW	LOW	LOW
199	SR 199	US 60 - Richmond Rd/York CL	Rte 612 - Longhill Rd	LOW	LOW	LOW	LOW
199	SR 199	Rte 612 - Longhill Rd	SR 321 - Monticello Ave	LOW	LOW	LOW	LOW
199	SR 199	SR 321 - Monticello Ave	SR 5 - John Tyler Hwy	LOW	LOW	MOD	LOW
199	SR 199	SR 5 - John Tyler Hwy	Williamsburg CL	SEV	SEV	SEV	SEV
199	SR 199	Williamsburg CL	SR 132 - Henry St	LOW	MOD	LOW	SEV
199	SR 199	SR 132 - Henry St	Mounts Bay Rd	LOW	MOD	LOW	SEV
199	SR 199	Mounts Bay Rd	US 60 - Pocahontas Tr./York CL	LOW	LOW	LOW	SEV
616	Strawberry Plains Rd	SR 5 - John Tyler Hwy	Rte 615 - Ironbound Rd	MOD		LOW	

WILLIAMSBURG

Route Num	Location	Segment From	Segment To	Existing Peak Period Congestion Level			
				AM		PM	
				NB/EB	SB/WB	NB/EB	SB/WB
5	Boundary St	Jamestown Rd	Francis St	MOD		MOD	
60	Bypass Rd	Richmond Rd	York CL	LOW	LOW	MOD	MOD
60	Bypass Rd	SR 132 - Henry St	SR 5 - Capitol Landing Rd	LOW	LOW	LOW	LOW
5	Capitol Landing Rd	US 60 - Bypass Rd	SR 143 - Merrimac Trail	LOW		LOW	
-	Colonial Pkwy	James City CL	York CL	LOW		LOW	
5	Francis St	Boundary St	SR 132 - Henry St	LOW	LOW	LOW	LOW
132	Henry St	SR 199	Francis St	LOW	LOW	LOW	LOW
5	Henry St	Francis St	SR 5 - Lafayette St	LOW	LOW	MOD	MOD
132	Henry St	SR 5 - Lafayette St	SR 132 Y	LOW	LOW	LOW	LOW
7081	Ironbound Rd	James City CL	Depue Dr	LOW		LOW	
7081	Ironbound Rd	Depue Dr	Longhill Rd	LOW		MOD	
7081	Ironbound Rd	Longhill Rd	Richmond Rd	LOW		LOW	
31	Jamestown Rd	Williamsburg CL	SR 199	LOW	LOW	LOW	LOW
5	Jamestown Rd	SR 199	John Tyler Hwy	MOD	SEV	LOW	SEV
5	Jamestown Rd	John Tyler Hwy	College Creek	LOW	LOW	LOW	LOW
5	Jamestown Rd	College Creek	Boundary St	LOW	LOW	LOW	LOW
7077	Lafayette St	Richmond Rd	SR 132 - Henry St	MOD		MOD	
5	Lafayette St	SR 132 - Henry St	Capital Landing Rd	MOD		MOD	
5	Lafayette St	Capital Landing Rd	US 60 - Page St	MOD		MOD	
143	Merrimac Trail	York CL (South)	SR 5 - Capital Landing Rd	LOW	LOW	LOW	SEV
143	Merrimac Trail	SR 5 - Capital Landing Rd	York CL (North)	LOW	LOW	LOW	LOW
321	Monticello Ave	Rte 615 - Ironbound Rd	Richmond Rd	LOW		MOD	
60	Page St	SR 5 - Capitol Landing Rd	Second St	LOW	LOW	LOW	LOW
60	Page St	Second St	Lafayette St	LOW	LOW	LOW	LOW
-	Quarterpath Rd	SR 199	US 60 - York St	LOW		LOW	
60	Richmond Rd	James City CL	Ironbound Rd	LOW	LOW	LOW	LOW
60	Richmond Rd	Ironbound Rd	Bypass Rd	LOW	LOW	MOD	MOD
7075	Richmond Rd	Bypass Rd	Monticello Ave	LOW		MOD	
7075	Richmond Rd	Monticello Ave	Brooks St	MOD		MOD	
7075	Richmond Rd	Brooks St	Boundary St	MOD		MOD	
132	SR 132	SR 132 Y	US 60 - Bypass Rd	MOD	LOW	LOW	LOW
132	SR 132 Y	Colonial Parkway	SR 132 - Henry St	LOW		LOW	

FIGURE 8 (CONTINUED) – EXISTING WEEKDAY PEAK PERIOD CONGESTION LEVELS

Source: HRTPO.

WILLIAMSBURG

Route Num	Location	Segment From	Segment To	Existing Peak Period Congestion Level			
				AM		PM	
				NB/EB	SB/WB	NB/EB	SB/WB
199	SR 199	James City CL (West)	SR 31 - Jamestown Rd	SEV	SEV	SEV	SEV
199	SR 199	SR 31 - Jamestown Rd	James City CL (East)	LOW	MOD	LOW	SEV
7079	Second St	Page St	York CL	LOW		LOW	
-	Treyburn Dr	Monticello Ave	Ironbound Rd	LOW		LOW	
60	York St	Lafayette St	James City CL	LOW	LOW	LOW	LOW

YORK COUNTY

Route Num	Location	Segment From	Segment To	Existing Peak Period Congestion Level			
				AM		PM	
				NB/EB	SB/WB	NB/EB	SB/WB
1020	Ballard St	Colonial Pkwy	SR 238 - Cook Rd	LOW		MOD	
238	Ballard St	SR 238 - Cook Rd	Coast Guard Training Center	MOD		MOD	
600	Big Bethel Rd	Hampton CL	SR 134 - Hampton Hwy	LOW	LOW	MOD	LOW
600	Big Bethel Rd	SR 134 - Hampton Hwy	SR 171 - Victory Blvd	MOD	LOW	LOW	LOW
60	Bypass Rd	Williamsburg CL	Rte 713 - Waller Mill Rd	LOW	LOW	MOD	MOD
60	Bypass Rd	Rte 713 - Waller Mill Rd	SR 132	LOW	LOW	MOD	MOD
143	Capitol Landing Rd	Williamsburg CL	SR 132	LOW	LOW	LOW	LOW
143	Capitol Landing Rd	SR 132	I-64	LOW	LOW	LOW	LOW
-	Colonial Pkwy	Williamsburg CL	Ballard St	MOD		MOD	
704	Cook Rd	US 17 - GW Mem Hwy	SR 238 - Goosley Rd	LOW		LOW	
238	Cook Rd	SR 238 - Goosley Rd	Ballard St	LOW		LOW	
173	Denbigh Blvd	Newport News CL	US 17 - GW Mem Hwy	LOW	LOW	LOW	LOW
782	E Yorktown Rd	SR 171 - Victory Blvd	Poquoson CL	LOW		LOW	
105	Fort Eustis Blvd	Newport News CL	US 17 - GW Mem Hwy	LOW	LOW	LOW	LOW
1050	Fort Eustis Blvd Ext	US 17 - GW Mem Hwy	Rte 634 - Old York Hampton Hwy	LOW		LOW	
17	George Washington Mem Hwy	Newport News CL	SR 171 - Victory Blvd	LOW	SEV	SEV	MOD
17	George Washington Mem Hwy	SR 171 - Victory Blvd	SR 134 - Hampton Hwy	LOW	MOD	LOW	SEV
17	George Washington Mem Hwy	SR 134 - Hampton Hwy	Rte 621 - Dare Rd	LOW	LOW	LOW	LOW
17	George Washington Mem Hwy	Rte 621 - Dare Rd	SR 173 - Denbigh Blvd	LOW	LOW	LOW	LOW
17	George Washington Mem Hwy	SR 173 - Denbigh Blvd	SR 105 - Fort Eustis Blvd	LOW	SEV	SEV	MOD
17	George Washington Mem Hwy	SR 105 - Fort Eustis Blvd	Rte 704 - Cook Rd	LOW	SEV	SEV	MOD
17	George Washington Mem Hwy	Rte 704 - Cook Rd	SR 238 - Goosley Rd	LOW	SEV	SEV	MOD
17	George Washington Mem Hwy	SR 238 - Goosley Rd	Gloucester CL	LOW	LOW	LOW	LOW
173	Goodwin Neck Rd	US 17 - GW Mem Hwy	Rte 630 - Wolf Trap Rd	LOW	MOD	LOW	SEV
238	Goosley Rd	SR 238 - Old Williamsburg Rd	Rte 637 - Crawford Rd	LOW		LOW	
238	Goosley Rd	Rte 637 - Crawford Rd	US 17 - GW Mem Hwy	LOW		LOW	
238	Goosley Rd	US 17 - GW Mem Hwy	Rte 704 - Cook Rd	LOW		LOW	
134	Hampton Hwy	US 17 - GW Mem Hwy	SR 171 - Victory Blvd	LOW	MOD	LOW	SEV
134	Hampton Hwy	SR 171 - Victory Blvd	Rte 600 - Big Bethel Rd	LOW	LOW	SEV	LOW
134	Hampton Hwy	Rte 600 - Big Bethel Rd	Hampton CL	LOW	LOW	MOD	LOW
64	I-64	James City CL	SR 199/Rte 646 - Newman Rd	LOW	LOW	LOW	LOW
64	I-64	SR 199/Rte 646 - Newman Rd	SR 143 - Camp Peary Rd	LOW	LOW	LOW	LOW
64	I-64	SR 143 - Camp Peary Rd	SR 199	MOD	LOW	LOW	LOW
64	I-64	SR 199	Busch Gardens Interchange	LOW	LOW	LOW	LOW

FIGURE 8 (CONTINUED) – EXISTING WEEKDAY PEAK PERIOD CONGESTION LEVELS

Source: HRTPO.

YORK COUNTY

Route Num	Location	Segment From	Segment To	Existing Peak Period Congestion Level			
				AM		PM	
				NB/EB	SB/WB	NB/EB	SB/WB
64	I-64	Busch Gardens Interchange	James City CL	MOD	LOW	MOD	MOD
646	Lightfoot Rd	US 60 - Richmond Rd	Mooretown Rd	LOW		LOW	
143	Merrimac Trail	James City CL	Busch Gardens Interchange	LOW	LOW	LOW	LOW
143	Merrimac Trail	Busch Gardens Interchange	SR 199/James City CL	LOW	LOW	LOW	LOW
143	Merrimac Trail	Penniman Rd	Second St	LOW	LOW	LOW	MOD
143	Merrimac Trail	Second St	Williamsburg CL	LOW	LOW	LOW	SEV
603	Mooretown Rd	Rte 713 - Waller Mill Rd	Rte 645 - Airport Rd	LOW		LOW	
603	Mooretown Rd	Rte 645 - Airport Rd	Old Mooretown Rd	LOW		LOW	
603	Mooretown Rd	Old Mooretown Rd	SR 199	LOW		LOW	
603	Mooretown Rd	SR 199	Rte 646 - Lightfoot Rd	LOW		LOW	
646	Newman Rd	I-64	Rte 602 - Fenton Mill Rd	LOW		LOW	
238	Old Williamsburg Rd	Newport News CL	Rte 660 - Baptist Rd	LOW		LOW	
238	Old Williamsburg Rd	Rte 660 - Baptist Rd	SR 238 - Goosley Rd	LOW		LOW	
641	Penniman Rd	SR 199	Colonial Pkwy	LOW	LOW	LOW	LOW
60	Pocahontas Trail	SR 199/James City CL	Kingsmill Rd	LOW	LOW	LOW	LOW
60	Pocahontas Trail	Kingsmill Rd	Busch Gardens Interchange	LOW	LOW	LOW	LOW
60	Pocahontas Trail	Busch Gardens Interchange	James City CL	LOW	LOW	LOW	LOW
132	SR 132	US 60 - Bypass Rd	SR 143 - Capitol Landing Rd	LOW	LOW	LOW	LOW
199	SR 199	I-64	Rte 603 - Mooretown Rd	LOW	LOW	LOW	LOW
199	SR 199	Rte 603 - Mooretown Rd	US 60 - Richmond Rd/JCC CL	LOW	LOW	LOW	LOW
199	SR 199	SR 143 - Merrimac Trail/JCC CL	I-64	LOW	LOW	LOW	LOW
199	SR 199	I-64	Marquis Pkwy	LOW		LOW	
199	SR 199	Marquis Pkwy	Rte 641 - Penniman Rd	LOW		LOW	
162	Second St	Williamsburg CL	SR 143 - Merrimac Trail	LOW		LOW	
171	Victory Blvd	Newport News CL	US 17 - GW Mem Hwy	LOW	LOW	SEV	LOW
171	Victory Blvd	US 17 - GW Mem Hwy	SR 134 - Hampton Hwy	LOW	LOW	MOD	SEV
171	Victory Blvd	SR 134 - Hampton Hwy	Rte 600 - Big Bethel Rd	LOW	LOW	SEV	LOW
171	Victory Blvd	Rte 600 - Big Bethel Rd	Rte 782 - Cary's Chapel Rd	LOW	LOW	MOD	LOW
171	Victory Blvd	Rte 782 - Cary's Chapel Rd	Poquoson CL	LOW	LOW	MOD	LOW
713	Waller Mill Rd	US 60 - Bypass Rd	Rte 603 - Mooretown Rd	LOW		LOW	

FIGURE 8 (CONTINUED) – EXISTING WEEKDAY PEAK PERIOD CONGESTION LEVELS

Source: HRTPO.

JAMES CITY COUNTY

Route Num	Location	Segment From	Segment To	AM PEAK PERIOD (5:00 am - 9:00 am)								PM PEAK PERIOD (3:00 pm - 7:00 pm)							
				Speed (mph)		Travel Time Index		Peak Time Start		Congestion Duration		Speed (mph)		Travel Time Index		Peak Time Start		Congestion Duration	
				NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
30	Barhamsville Rd	I-64	US 60 - Richmond Rd	47	42	1.06	1.12	7:15	5:15	-	-	49	41	1.00	1.13	15:00	17:45	-	-
64	I-64	New Kent CL	SR 30 - Old Stage Rd	68	67	0.98	0.99	6:15	5:00	-	-	65	69	1.02	0.97	15:45	17:00	-	-
64	I-64	SR 30 - Old Stage Rd	Rte 607 - Croaker Rd	65	66	1.02	0.99	8:45	5:00	-	-	66	65	1.00	1.02	16:15	16:15	-	-
64	I-64	Rte 607 - Croaker Rd	York CL	67	66	0.98	0.98	5:00	5:00	-	-	66	67	1.00	0.97	17:00	16:45	-	-
64	I-64	York CL	SR 143 Merrimac Trail/NN CL	53	56	1.21	1.13	8:45	8:00	-	-	50	54	1.29	1.17	15:45	17:30	-	-
615	Ironbound Rd/Sandy Bay Rd	SR 31 - Jamestown Rd	SR 5 - John Tyler Hwy	22	28	1.36	1.09	5:30	7:15	-	-	28	28	1.08	1.10	16:00	16:15	-	-
615	Ironbound Rd/News Rd	SR 5 - John Tyler Hwy	SR 321 - Monticello Ave	34	33	1.05	1.08	6:45	7:00	-	-	35	32	1.03	1.12	17:30	17:00	-	-
31	Jamestown Rd	Rte 614 - Greensprings Rd	Rte 681 - Sandy Bay Rd	41	32	1.01	1.32	7:15	6:15	-	-	38	40	1.08	1.05	17:45	17:00	-	-
31	Jamestown Rd	Rte 681 - Sandy Bay Rd	Williamsburg CL	32	37	1.14	1.02	5:00	7:30	-	-	33	36	1.11	1.05	15:15	18:30	-	-
5	John Tyler Memorial Hwy	Charles City CL	Rte 614 - Centerville Rd	48	54	1.03	1.04	8:45	8:00	-	-	45	54	1.10	1.04	15:15	16:30	-	-
5	John Tyler Memorial Hwy	Rte 614 - Centerville Rd	Rte 615 - Ironbound Rd	34	38	1.15	1.06	7:15	7:15	-	-	35	38	1.10	1.07	16:15	15:00	-	-
5	John Tyler Memorial Hwy	Rte 615 - Ironbound Rd	SR 199	29	33	1.15	1.02	7:00	8:30	-	-	29	30	1.15	1.12	16:30	17:30	-	-
143	Merrimac Trail	Newport News CL	York CL (S. of Busch Gardens)	48	46	1.09	1.12	8:15	5:00	-	-	43	48	1.21	1.06	17:00	15:30	-	-
143	Merrimac Trail	SR 199/York CL	Rte 641 - Penniman Rd/York CL	38	38	1.11	1.07	6:15	7:30	-	-	39	36	1.07	1.12	18:15	17:30	-	-
30	Old Stage Hwy	New Kent CL	Rte 601 - Barnes Rd	53	51	1.03	1.06	8:00	7:00	-	-	51	50	1.06	1.07	16:15	17:30	-	-
30	Old Stage Hwy	Rte 601 - Barnes Rd	I-64	54	53	1.03	1.03	5:00	8:00	-	-	55	52	1.02	1.04	16:45	17:30	-	-
60	Pocahontas Trail	Williamsburg CL	SR 199/York CL	29	31	1.16	1.14	8:00	8:45	-	-	31	33	1.11	1.07	17:15	15:30	-	-
60	Pocahontas Trail	York CL	Newport News CL	36	35	1.10	1.12	8:15	8:15	-	-	32	35	1.21	1.11	16:15	15:45	-	-
60	Richmond Rd	New Kent CL	SR 30 - Barhamsville Rd	53	50	1.05	1.13	8:15	7:15	-	-	53	56	1.05	1.00	15:00	15:00	-	-
60	Richmond Rd	SR 30 - Barhamsville Rd	Rte 607 - Croaker Rd	40	39	1.06	1.10	7:30	7:15	-	-	39	40	1.10	1.07	17:15	17:00	-	-
60	Richmond Rd	Rte 607 - Croaker Rd	Rte 614 - Centerville Rd	35	34	1.10	1.16	8:45	8:45	-	-	33	32	1.18	1.24	16:15	16:00	-	-
60	Richmond Rd	Rte 614 - Centerville Rd	SR 199	21	17	1.29	1.45	7:45	8:00	-	2	18	12	1.49	2.06	17:15	17:30	9	14
60	Richmond Rd	SR 199	Rte 658 - Olde Towne Rd	38	38	1.05	1.06	7:15	8:45	-	-	33	35	1.21	1.15	15:00	17:15	-	-
60	Richmond Rd	Rte 658 - Olde Towne Rd	Williamsburg CL	24	29	1.23	1.10	6:15	5:15	-	-	26	28	1.16	1.17	18:15	17:45	-	-
30	Rochambeau Dr	US 60 - Richmond Rd	Rte 607 - Croaker Rd	43	46	1.13	1.10	8:45	5:15	-	-	40	45	1.19	1.10	18:00	18:00	-	-
199	SR 199	US 60 - Richmond Rd/York CL	Rte 612 - Longhill Rd	59	56	1.04	1.09	6:15	7:00	-	-	60	59	1.02	1.03	18:30	15:30	-	-
199	SR 199	Rte 612 - Longhill Rd	SR 321 - Monticello Ave	56	57	1.05	1.03	5:15	6:00	-	-	57	59	1.04	1.00	18:30	18:45	-	-
199	SR 199	SR 321 - Monticello Ave	SR 5 - John Tyler Hwy	43	51	1.14	1.01	8:00	7:00	-	-	40	52	1.22	1.00	17:30	15:45	-	-
199	SR 199	SR 5 - John Tyler Hwy	Williamsburg CL	23	24	1.51	1.48	8:00	8:45	1	7	15	21	2.32	1.68	17:30	17:15	14	13
199	SR 199	Williamsburg CL	Mounts Bay Rd	41	36	1.16	1.29	8:00	8:00	-	-	40	31	1.17	1.51	17:15	17:30	-	3
199	SR 199	Mounts Bay Rd	US 60 - Pocahontas Tr./York CL	52	44	1.01	1.13	8:45	8:00	-	-	52	30	1.02	1.70	15:15	17:30	-	4

FIGURE 9 – ROADWAY PEAK PERIOD TRAVEL TIME AND SPEED DATA (2017)

Source: HRTPO analysis of INRIX data.

Speed represents the yearly average travel speed during the slowest 15-minute interval during each peak period.

Travel Time Index is the ratio of travel time in the peak period to travel time in free-flow conditions. A TTI of 1.20 means a 20-minute trip in free-flow conditions takes 24 minutes in the peak period.

Peak Time Start represents the starting time of the 15-miunte period where the average speeds are the slowest during the peak period.

Congestion Duration represents the number of 15-minute intervals during each peak period when conditions are severely congested. Each roadway segment may be congested for up to 16 15-minute intervals during each peak period.

WILLIAMSBURG

Route Num	Location	Segment From	Segment To	AM PEAK PERIOD (5:00 am - 9:00 am)								PM PEAK PERIOD (3:00 pm - 7:00 pm)							
				Speed (mph)		Travel Time Index		Peak Time Start		Congestion Duration		Speed (mph)		Travel Time Index		Peak Time Start		Congestion Duration	
				NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
60	Bypass Rd	Richmond Rd	York CL	25	25	1.17	1.13	8:45	8:45	-	-	23	21	1.28	1.34	17:30	17:15	-	-
60	Bypass Rd	SR 132 - Henry St	SR 5 - Capitol Landing Rd	27	27	1.13	1.16	8:00	8:45	-	-	25	27	1.22	1.15	16:00	16:30	-	-
5	Francis St	Boundary St	SR 132 - Henry St	20	19	1.00	1.00	5:00	5:00	-	-	18	16	1.10	1.17	18:45	18:45	-	-
132	Henry St	SR 199	Francis St	29	26	1.02	1.08	5:45	8:15	-	-	28	27	1.06	1.03	15:45	18:45	-	-
5	Henry St	Francis St	SR 5 - Lafayette St	15	14	1.04	1.15	8:15	8:45	-	-	12	12	1.32	1.26	17:15	17:15	-	-
132	Henry St	SR 5 - Lafayette St	SR 132 Y	24	24	1.20	1.10	7:00	7:15	-	-	26	25	1.12	1.09	15:00	15:00	-	-
31	Jamestown Rd	Williamsburg CL	SR 199	32	37	1.14	1.02	5:00	7:30	-	-	33	36	1.11	1.05	15:15	18:30	-	-
5	Jamestown Rd	SR 199	John Tyler Hwy	23	14	1.31	1.53	8:00	7:15	-	4	24	14	1.22	1.59	15:00	16:45	-	10
5	Jamestown Rd	John Tyler Hwy	Boundary St	27	27	1.01	1.02	8:15	8:45	-	-	26	26	1.05	1.08	18:00	17:15	-	-
143	Merrimac Trail	York CL (South)	SR 5 - Capital Landing Rd	28	19	1.16	1.22	7:45	5:45	-	-	28	16	1.17	1.41	15:00	16:45	-	1
143	Merrimac Trail	SR 5 - Capital Landing Rd	York CL (North)	36	26	1.07	1.06	8:45	7:45	-	-	37	25	1.07	1.10	15:30	18:15	-	-
60	Page St	SR 5 - Capitol Landing Rd	Second St	27	27	1.16	1.13	8:45	8:00	-	-	27	25	1.15	1.22	16:30	16:00	-	-
60	Page St	Second St	Lafayette St	31	29	1.14	1.16	8:45	8:00	-	-	33	31	1.07	1.11	15:30	17:15	-	-
60	Richmond Rd	James City CL	Ironbound Rd	29	24	1.10	1.23	5:15	6:15	-	-	28	26	1.17	1.16	17:45	18:15	-	-
60	Richmond Rd	Ironbound Rd	Bypass Rd	25	25	1.13	1.17	8:45	8:45	-	-	21	23	1.34	1.28	17:15	17:30	-	-
132	SR 132	SR 132 Y	US 60 - Bypass Rd	22	30	1.26	1.12	8:45	7:45	-	-	22	31	1.23	1.07	17:30	15:45	-	-
199	SR 199	James City CL (West)	SR 31 - Jamestown Rd	23	24	1.51	1.48	8:00	8:45	1	7	15	21	2.32	1.68	17:30	17:15	14	13
199	SR 199	SR 31 - Jamestown Rd	James City CL (East)	41	36	1.16	1.29	8:00	8:00	-	-	40	31	1.17	1.51	17:15	17:30	-	3
60	York St	Lafayette St	James City CL	29	31	1.16	1.14	8:00	8:45	-	-	31	33	1.11	1.07	17:15	15:30	-	-

FIGURE 9 (CONTINUED) – ROADWAY PEAK PERIOD TRAVEL TIME AND SPEED DATA (2017)

Source: HRTPO analysis of INRIX data.

Speed represents the yearly average travel speed during the slowest 15-minute interval during each peak period.

Travel Time Index is the ratio of travel time in the peak period to travel time in free-flow conditions. A TTI of 1.20 means a 20-minute trip in free-flow conditions takes 24 minutes in the peak period.

Peak Time Start represents the starting time of the 15-miunte period where the average speeds are the slowest during the peak period.

Congestion Duration represents the number of 15-minute intervals during each peak period when conditions are severely congested. Each roadway segment may be congested for up to 16 15-minute intervals during each peak period.

YORK COUNTY

Route Num	Location	Segment From	Segment To	AM PEAK PERIOD (5:00 am - 9:00 am)								PM PEAK PERIOD (3:00 pm - 7:00 pm)							
				Speed (mph)		Travel Time Index		Peak Time Start		Congestion Duration		Speed (mph)		Travel Time Index		Peak Time Start		Congestion Duration	
				NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
600	Big Bethel Rd	Hampton CL	SR 134 - Hampton Hwy	27	32	1.21	1.09	8:00	7:45	-	-	25	32	1.30	1.09	17:00	17:30	-	-
600	Big Bethel Rd	SR 134 - Hampton Hwy	SR 171 - Victory Blvd	26	28	1.32	1.25	8:45	8:45	-	-	28	29	1.22	1.21	15:45	15:45	-	-
60	Bypass Rd	Williamsburg CL	SR 132	25	25	1.17	1.13	8:45	8:45	-	-	23	21	1.28	1.34	17:30	17:15	-	-
143	Capitol Landing Rd	Williamsburg CL	SR 132	36	26	1.07	1.06	8:45	7:45	-	-	37	25	1.07	1.10	15:30	18:15	-	-
143	Capitol Landing Rd	SR 132	I-64	24	28	1.08	1.12	8:45	8:00	-	-	21	25	1.19	1.24	15:45	15:45	-	-
173	Denbigh Blvd	Newport News CL	US 17 - GW Mem Hwy	38	39	1.11	1.06	8:00	8:00	-	-	34	37	1.22	1.12	17:30	16:15	-	-
105	Fort Eustis Blvd	Newport News CL	US 17 - GW Mem Hwy	43	46	1.09	1.05	8:00	7:30	-	-	42	47	1.12	1.03	17:30	15:00	-	-
17	George Washington Mem Hwy	Newport News CL	SR 171 - Victory Blvd	32	25	1.12	1.55	7:45	8:00	-	2	18	28	2.04	1.35	17:30	17:30	10	-
17	George Washington Mem Hwy	SR 171 - Victory Blvd	SR 134 - Hampton Hwy	39	24	0.99	1.37	8:45	8:00	-	-	32	23	1.18	1.45	18:00	17:15	-	4
17	George Washington Mem Hwy	SR 134 - Hampton Hwy	SR 173 - Denbigh Blvd	32	36	1.07	1.04	7:45	7:45	-	-	30	37	1.16	1.00	16:30	18:45	-	-
17	George Washington Mem Hwy	SR 173 - Denbigh Blvd	SR 105 - Fort Eustis Blvd	39	30	1.16	1.48	7:00	7:45	-	2	30	33	1.49	1.34	16:45	17:30	6	-
17	George Washington Mem Hwy	SR 105 - Fort Eustis Blvd	SR 238 - Goosley Rd	39	30	1.16	1.48	7:00	7:45	-	2	30	33	1.49	1.34	16:45	17:30	6	-
17	George Washington Mem Hwy	SR 238 - Goosley Rd	Gloucester CL	45	45	1.06	1.09	8:00	7:45	-	-	42	42	1.15	1.16	16:45	17:30	-	-
173	Goodwin Neck Rd	US 17 - GW Mem Hwy	Rte 630 - Wolf Trap Rd	31	27	1.22	1.31	7:45	8:15	-	-	31	25	1.20	1.41	17:15	17:15	-	2
134	Hampton Hwy	US 17 - GW Mem Hwy	SR 171 - Victory Blvd	38	28	1.06	1.36	8:30	8:45	-	-	32	22	1.25	1.69	17:30	17:30	-	6
134	Hampton Hwy	SR 171 - Victory Blvd	Rte 600 - Big Bethel Rd	34	35	1.21	1.19	7:45	8:00	-	-	29	36	1.45	1.16	17:45	15:45	2	-
134	Hampton Hwy	Rte 600 - Big Bethel Rd	Hampton CL	39	36	1.12	1.24	5:00	7:45	-	-	33	38	1.33	1.18	17:30	17:30	-	-
64	I-64	James City CL	SR 199/Rte 646 - Newman Rd	67	66	0.98	0.98	5:00	5:00	-	-	66	67	1.00	0.97	17:00	16:45	-	-
64	I-64	SR 199/Rte 646 - Newman Rd	SR 143 - Camp Peary Rd	65	66	1.02	0.99	8:45	5:00	-	-	63	65	1.04	1.00	17:15	15:00	-	-
64	I-64	SR 143 - Camp Peary Rd	SR 199	55	64	1.18	1.02	8:45	5:15	-	-	60	63	1.07	1.03	15:00	15:00	-	-
64	I-64	SR 199	Busch Gardens Interchange	59	58	1.09	1.06	7:30	8:45	-	-	57	56	1.13	1.10	15:30	15:15	-	-
64	I-64	Busch Gardens Interchange	James City CL	53	56	1.21	1.13	8:45	8:00	-	-	50	54	1.29	1.17	15:45	17:30	-	-
143	Merrimac Trail	James City CL	Busch Gardens Interchange	46	48	1.12	1.09	5:00	8:15	-	-	48	43	1.06	1.21	15:30	17:00	-	-
143	Merrimac Trail	Busch Gardens Interchange	SR 199/James City CL	45	50	1.05	1.04	8:15	5:30	-	-	44	51	1.07	1.02	17:30	15:00	-	-
143	Merrimac Trail	Penniman Rd	Second St	29	26	1.04	1.20	8:45	6:45	-	-	24	24	1.24	1.28	15:30	17:15	-	-
143	Merrimac Trail	Second St	Williamsburg CL	28	19	1.16	1.22	7:45	5:45	-	-	28	16	1.17	1.41	15:00	16:45	-	1
641	Penniman Rd	SR 199	Colonial Pkwy	41	45	1.10	1.00	6:45	5:00	-	-	42	43	1.09	1.03	15:45	15:30	-	-
60	Pocahontas Trail	SR 199/James City CL	Busch Gardens Interchange	32	35	1.05	1.09	8:45	8:30	-	-	30	30	1.15	1.24	18:00	16:15	-	-
60	Pocahontas Trail	Busch Gardens Interchange	James City CL	36	35	1.10	1.12	8:15	8:15	-	-	32	35	1.21	1.11	16:15	15:45	-	-
132	SR 132	US 60 - Bypass Rd	SR 143 - Capitol Landing Rd	33	38	1.24	1.07	7:30	7:00	-	-	34	37	1.20	1.10	17:00	16:45	-	-
199	SR 199	I-64	Rte 603 - Mooretown Rd	48	51	1.08	1.02	5:30	5:00	-	-	53	53	0.98	0.97	16:15	18:30	-	-
199	SR 199	Rte 603 - Mooretown Rd	US 60 - Richmond Rd/JCC CL	56	58	1.04	0.99	5:00	5:00	-	-	58	58	0.99	1.00	18:15	16:15	-	-
199	SR 199	SR 143 - Merrimac Trail/JCC CL	I-64	50	45	1.06	1.05	5:00	5:15	-	-	52	50	1.02	0.96	15:15	15:15	-	-
171	Victory Blvd	Newport News CL	US 17 - GW Mem Hwy	26	34	1.21	1.11	8:45	7:30	-	-	18	32	1.76	1.20	17:30	17:30	8	-
171	Victory Blvd	US 17 - GW Mem Hwy	SR 134 - Hampton Hwy	28	22	1.16	1.25	8:45	6:00	-	-	25	19	1.32	1.45	17:45	17:00	-	4
171	Victory Blvd	SR 134 - Hampton Hwy	Rte 600 - Big Bethel Rd	39	33	1.06	1.17	8:15	7:45	-	-	23	32	1.79	1.23	17:45	16:00	6	-
171	Victory Blvd	Rte 600 - Big Bethel Rd	Poquoson CL	36	31	1.09	1.24	8:15	7:45	-	-	30	32	1.30	1.19	17:45	17:30	-	-

FIGURE 9 (CONTINUED) – ROADWAY PEAK PERIOD TRAVEL TIME AND SPEED DATA (2017)

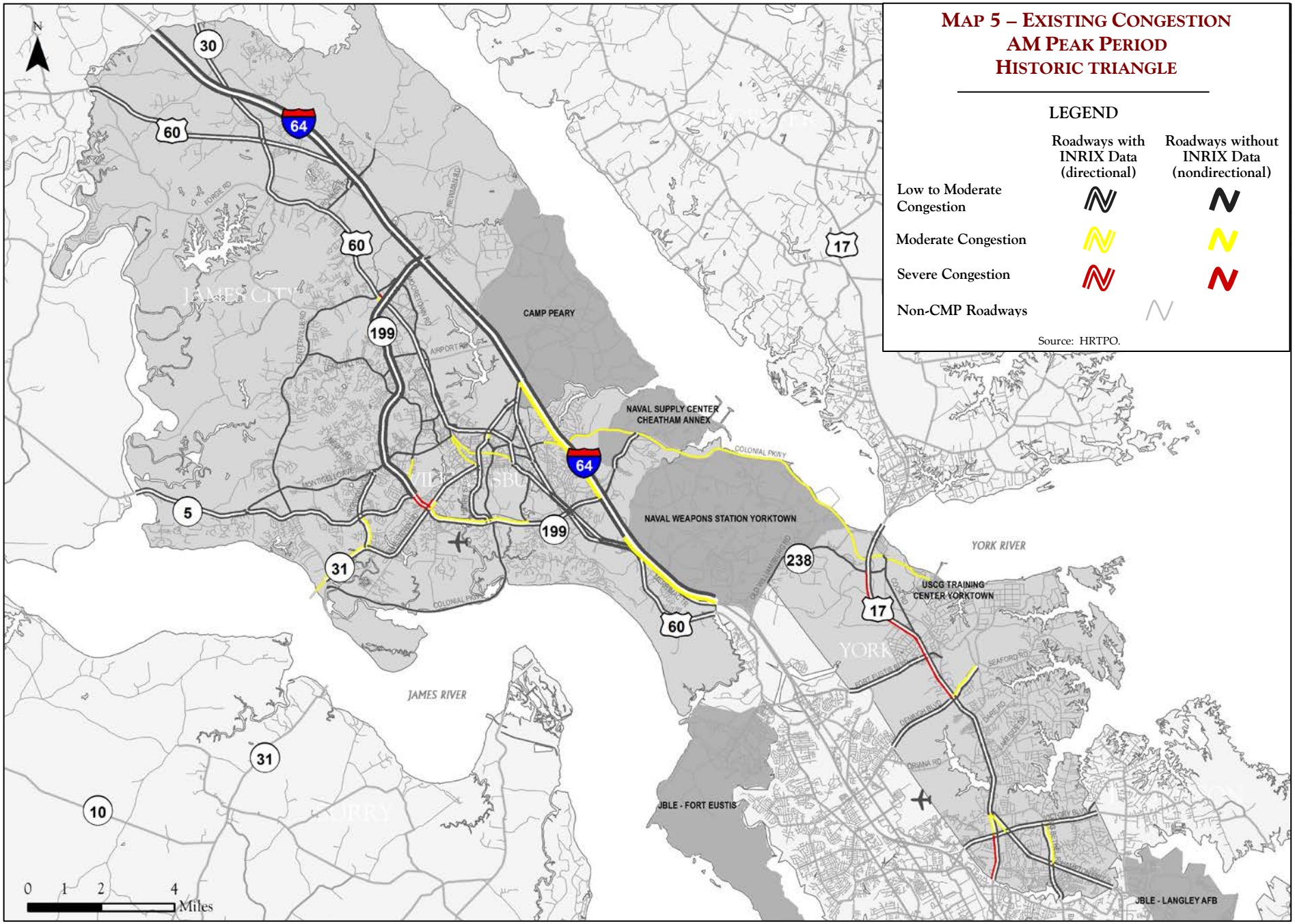
Source: HRTPO analysis of INRIX data.

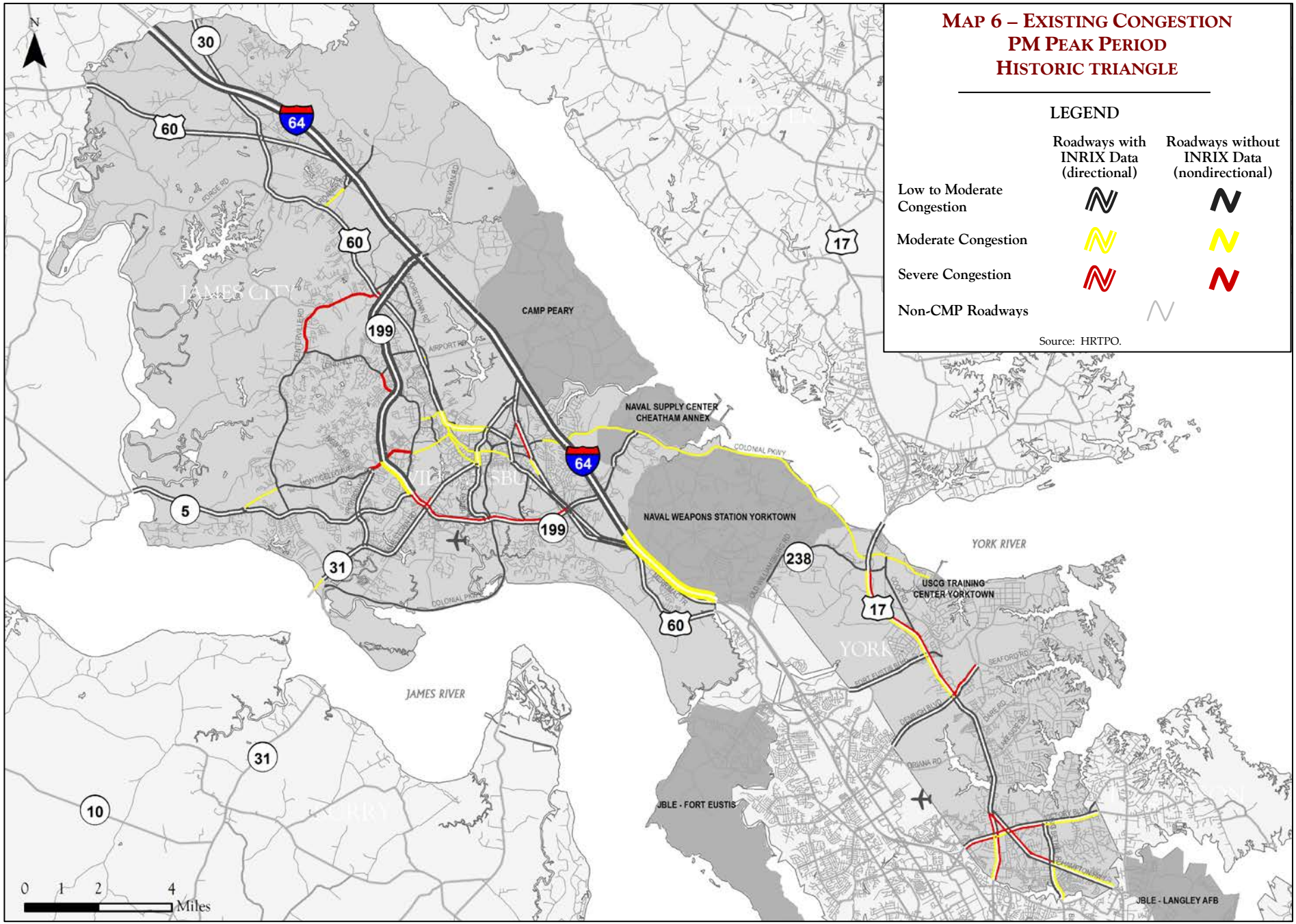
Speed represents the yearly average travel speed during the slowest 15-minute interval during each peak period.

Travel Time Index is the ratio of travel time in the peak period to travel time in free-flow conditions. A TTI of 1.20 means a 20-minute trip in free-flow conditions takes 24 minutes in the peak period.

Peak Time Start represents the starting time of the 15-miunte period where the average speeds are the slowest during the peak period.

Congestion Duration represents the number of 15-minute intervals during each peak period when conditions are severely congested. Each roadway segment may be congested for up to 16 15-minute intervals during each peak period.


MAP 5 – EXISTING CONGESTION
AM PEAK PERIOD
HISTORIC TRIANGLE
LEGEND
Roadways with INRIX Data (directional)
Roadways without INRIX Data (nondirectional)
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
JAMES CITY
YORK
COLONIAL PKWY
0 1 2 4 Miles


MAP 6 – EXISTING CONGESTION
PM PEAK PERIOD
HISTORIC TRIANGLE
LEGEND
Roadways with INRIX Data (directional)
Roadways without INRIX Data (nondirectional)
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
N
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
JAMES CITY
YORK
30
60
64
17
199
5
31
238
10
0 1 2 4 Miles

Roadway Safety

Roadway crashes have a wide range of impacts, not only on the transportation system but also on families, friends, and society as a whole. Because of these impacts, roadway safety must be one of the highest priorities in the transportation planning process.

There were over 2,300 traffic crashes in the Historic Triangle in 2017 (**Figures 10 and 11**), which resulted in 20 fatalities and 1,358 injuries. On a locality basis:

- James City County – 1,002 total crashes with 15 fatalities and 715 injuries
- Williamsburg – 209 total crashes with no fatalities and 139 injuries
- York County – 1,101 total crashes with 5 fatalities and 504 injuries

In James City County, the number of crashes, injuries, and fatalities were all at record-high levels in 2017. In fact, the number of crashes, injuries, and fatalities were all more than twice the level seen back in 2000. In Williamsburg, the number of crashes and injuries decreased from 2016 to 2017, but were still much higher than the levels seen throughout the early 2010s. The number of crashes in York County hit a 13-year high in 2017, but the number of injuries in 2017 was lower than most years since 2000.

Characteristics of crashes in the Historic Triangle for the last five years (2013-2017) are shown in **Figure 12 o**n page 28. Notable among these characteristics – which are emphasis areas in the Virginia Strategic Highway Safety Plan – include:

	James City County			Williamsburg			York County		
Year	Fatalities	Injuries	Crashes	Fatalities	Injuries	Crashes	Fatalities	Injuries	Crashes
2000	7	324	499	0	103	185	9	549	857
2001	4	366	513	0	108	215	10	555	868
2002	6	383	558	1	103	222	9	592	896
2003	5	385	656	0	119	204	11	677	1089
2004	6	384	650	0	99	186	5	717	1137
2005	8	403	703	0	99	186	12	672	1053
2006	7	375	759	0	94	171	4	570	1052
2007	4	373	726	0	95	236	8	554	1063
2008	9	323	608	0	99	181	8	538	909
2009	4	451	660	1	76	141	2	479	778
2010	2	623	698	0	93	160	6	476	823
2011	6	654	703	2	113	162	5	539	905
2012	1	447	741	0	96	173	2	600	970
2013	8	438	770	0	117	194	4	523	947
2014	5	442	734	0	111	195	5	472	888
2015	8	482	819	0	94	215	5	515	938
2016	4	522	869	0	149	216	9	442	920
2017	15	715	1002	0	139	209	5	504	1101

Figure 10 – Number of Fatalities, Injuries, and Crashes in the Historic Triangle, 2000-2017

Source: HRTPO analysis of VDOT data.

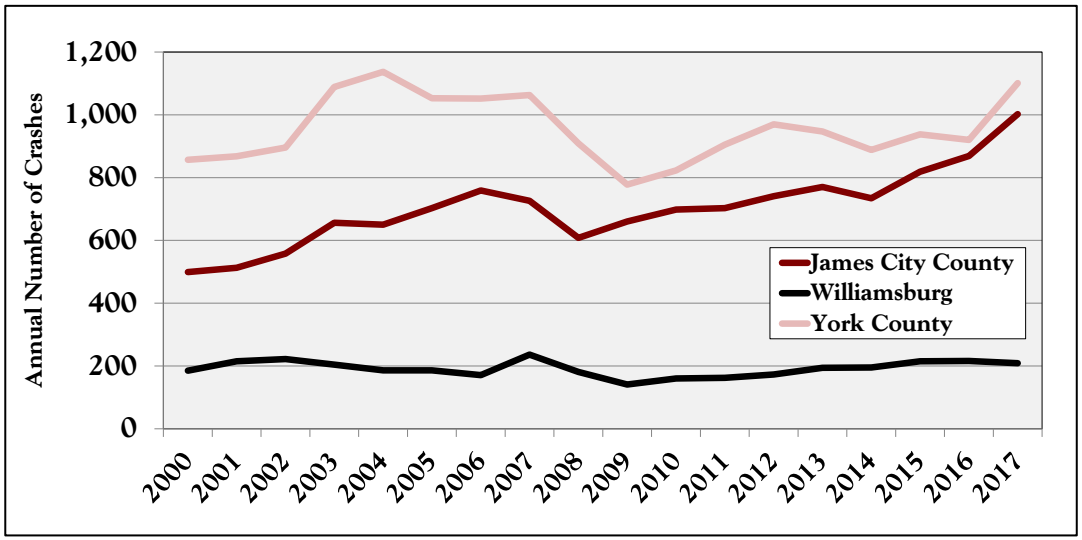


Figure 11 – Number of Crashes in the Historic Triangle, 2000-2017

Source: HRTPO analysis of VDOT data.

- **Alcohol Use** – Although 6% of all crashes in the Historic Triangle involved alcohol use from 2013-2017, 29% of all fatalities resulted from traffic crashes involving alcohol use. This is especially an issue in James City County, where 38% of all fatalities in traffic crashes resulted from crashes that involve alcohol use.
- **Active Transportation** – Although only 2% of all crashes and 3% of all injuries in the Historic Triangle involved bicyclists or pedestrians, 19% of all fatalities in traffic crashes in the Historic Triangle from 2013-2017 were bicyclists or pedestrians.
- **Distracted Driving** – Nearly one out of four crashes (24%) and more than four out of every ten fatalities (44%) in the Historic Triangle resulted from distracted driving.
- **Roadway Departure** – Half of all fatalities in the Historic Triangle involved the vehicle departing the roadway. In York County, 61% of all fatalities involved roadway departure.
- **Speeding** – Between 2013 and 2017, four out of every ten fatalities (41%) in the Historic Triangle involved speeding.
- **Safety Belt Use** – Nearly half (47%) of all people killed in traffic crashes in the Historic Triangle between 2013 and 2017 were not using a safety belt. In James City County, this number is 60%.

Roadway Segments

In order to determine the location of crashes on roadway segments throughout the Historic Triangle, HRTPO staff analyzed VDOT crash location data for the five-year period from 2013-2017. Based on this analysis, HRTPO produced two measures that evaluate the safety of each roadway segment:

- **Crash Rate** – The crash rate is the number of crashes on a roadway segment divided by the total amount of roadway travel, listed in terms of million vehicle-miles of travel (MVMT).

- **EPDO Rate** - The Equivalent Property Damage Only (EPDO) Rate not only takes into account the rate of crashes but the severity of crashes as well. Priority should be given to those roadway segments with the highest EPDO Rates. EPDO Rates are calculated by first categorizing crashes into those that involve at least one fatality (FAT crashes), at least one injury but no fatalities (INJ crashes), and that only result in property damage (PDO crashes). Weighting factors are then applied to FAT and INJ crashes to account for the increased severity of these types of crashes. This analysis uses the same weighting factors (3 for INJ crashes, 12 for FAT) that HRTPO used in the Hampton Roads Regional Safety Study[6], which results in the following formula:

$$\text{EPDO Rate} = \frac{1{,}000{,}000 \times \left[\begin{array}{c}\text{Annual PDO crashes} \\ +\,3 \times \text{Annual INJ crashes} \\ +\,12 \times \text{Annual FAT crashes}\end{array}\right]}{365 \times \text{AADT} \times \text{Segment Length}}$$

[6] *Hampton Roads Regional Safety Study 2013/2014 Update*, HRTPO, October 2013.

	James City County			Williamsburg			York County			Historic Triangle		
	% of Crashes	% of Injuries	% of Fatalities	% of Crashes	% of Injuries	% of Fatalities	% of Crashes	% of Injuries	% of Fatalities	% of Crashes	% of Injuries	% of Fatalities
Alcohol	6.0%	7.0%	37.5%	6.0%	7.4%	N/A	5.4%	6.5%	17.9%	5.9%	6.8%	29.4%
Bike/Pedestrian	2.1%	3.6%	17.5%	5.4%	9.7%	N/A	0.8%	1.6%	21.4%	1.8%	3.4%	19.1%
Distracted Driving	24.4%	25.6%	50.0%	33.6%	34.8%	N/A	22.6%	23.8%	35.7%	24.5%	25.8%	44.1%
Intersections	39.6%	41.1%	37.5%	34.6%	33.4%	N/A	45.1%	46.2%	25.0%	41.7%	42.5%	32.4%
Road Departure	20.1%	17.9%	42.5%	8.0%	8.4%	N/A	16.7%	15.6%	60.7%	17.2%	15.8%	50.0%
Speeding	14.7%	16.4%	45.0%	11.5%	12.3%	N/A	20.5%	21.1%	35.7%	17.1%	18.0%	41.1%
Unbelted	4.1%	9.0%	60.0%	3.1%	7.9%	N/A	2.2%	7.1%	28.6%	3.1%	8.1%	47.1%
Young Drivers	24.7%	24.7%	7.5%	22.8%	22.8%	N/A	24.7%	24.7%	17.9%	24.5%	24.5%	11.8%

FIGURE 12 – CHARACTERISTICS OF CRASHES IN THE HISTORIC TRIANGLE, 2013-2017

Source: HRTPO analysis of VDOT data. Image source: VDOT.

Figure 13 on pages 30-34 shows both the Crash Rate and EPDO Rate for 2013-2017 for all of the roadway segments in the Historic Triangle that are classified as minor collectors and above. **Map 7** on page 35 shows the EPDO Rate for each of these roadways.

The roadways in the Historic Triangle that are the most hazardous (based on having the highest EPDO Rates between 2013 and 2017) are shown below:

James City County

- Cranston's Mill Pond Road - Jolly Pond Road to Chickahominy Road (EPDO Rate = 34.16)
- Airport Road - Richmond Road to Mooretown Road (29.20)
- Brookwood Drive - Lake Powell Road to Route 199 (19.39)
- Longhill Road - Olde Towne Road to Route 199 (10.56)
- Richmond Road - Lightfoot Road to Route 199 (10.01)
- Jolly Pond Road - Cranston's Mill Pond Road to Centerville Road (9.89)
- Greensprings Road - Jamestown Road to John Tyler Highway (8.47)
- Monticello Avenue - Route 199 to Ironbound Road at the Williamsburg City Line (8.28)

Williamsburg

- Jamestown Road - James City CL to Route 199 (33.79)
- Francis Street - Boundary street to Henry Street (24.34)
- Boundary Street - Jamestown Road to Francis Street (13.97)
- Henry Street - Lafayette Street to Route 132Y (13.53)
- Route 132 - Route 132Y to Bypass Road (12.05)
- Jamestown Road - Route 199 to John Tyler Highway (11.45)
- Ironbound Road - Longhill Road to Richmond Road (10.43)
- Bypass Road - Richmond Road to York CL (9.15)

York County

- Waller Mill Road - Bypass Road to Mooretown Road (19.11)
- Old York Hampton Highway - Fort Eustis Boulevard Ext to Hornsbyville Road (16.85)
- Merrimac Trail - Penniman Road to Second Street (12.17)
- Barlow Road - Skimino Road to East Rochambeau Drive (12.17)
- Mooretown Road - Route 199 to Lightfoot Road (10.26)
- Goosley Road – George Washington Memorial Highway to Cook Road (8.20)
- Fort Eustis Boulevard Ext – George Washington Memorial Highway to Old York Hampton Highway (8.10)

JAMES CITY COUNTY

Route #	Facility	Segment From	Segment To	PDO Crashes	INJ Crashes	FAT Crashes	Total Crashes	Crashes per MVMT	EPDO per MVMT
645	Airport Rd	US 60 - Richmond Rd	Rte 603 - Mooretown Rd/York CL	16	10	0	26	16.51	29.20
30	Barhamsville Rd	I-64	US 60 - Richmond Rd	26	13	2	41	1.34	2.90
700	Brookwood Dr	Rte 617 - Lake Powell Rd	SR 199	11	4	0	15	12.65	19.39
614	Centerville Rd	SR 5 - John Tyler Hwy	Rte 5000 - Monticello Ave	8	4	0	12	2.51	4.18
614	Centerville Rd	Rte 5000 - Monticello Ave	Rte 613 - News Road	10	11	0	21	1.35	2.77
614	Centerville Rd	Rte 613 - News Road	Rte 612 - Longhill Rd	27	10	1	38	0.80	1.45
614	Centerville Rd	Rte 612 - Longhill Rd	US 60 - Richmond Rd	53	47	1	101	1.78	3.63
631	Chickahominy Rd	Rte 632 - Cranstons Mill Pond Rd	US 60 - Richmond Rd	5	5	0	10	1.43	2.87
-	Colonial Pkwy	Jamestown Visitor Center	Williamsburg CL	0	3	0	3	0.09	0.27
632	Cranston's Mill Pond Rd	Rte 611 - Jolly Pond Rd	Rte 631 - Chickahominy Rd	17	11	0	28	19.13	34.16
607	Croaker Rd	US 60 - Richmond Rd	I-64	15	26	0	41	1.99	4.51
607	Croaker Rd	I-64	Rte 606 - Ware Creek Rd	7	15	0	22	1.70	4.02
615	Depue Dr	Rte 615 - Ironbound Rd	SR 322 - Ashbury Rd	4	5	0	9	0.99	2.08
615	Depue Dr	SR 322 - Ashbury Rd	Rte 612 - Longhill Rd	2	3	0	5	1.14	2.52
603	Diascund Rd	Rte 610 - Forge Rd	US 60 - Richmond Rd	7	5	1	13	2.83	7.39
610	Forge Rd	Rte 603 - Diascund Rd	US 60 - Richmond Rd	20	12	0	32	2.02	3.53
614	Greensprings Rd	SR 31 - Jamestown Rd	SR 5 - John Tyler Hwy	27	23	0	50	4.41	8.47
64	I-64	New Kent CL	SR 30 - Old Stage Rd	96	43	3	142	0.51	0.94
64	I-64	SR 30 - Old Stage Rd	Rte 607 - Croaker Rd	115	45	3	163	0.33	0.58
64	I-64	Rte 607 - Croaker Rd	York CL	52	30	1	83	0.40	0.74
64	I-64	York CL	SR 143 Merrimac Trail/NN CL	386	186	2	574	1.60	2.69
615	Ironbound Rd	SR 31 - Jamestown Rd	SR 5 - John Tyler Hwy	9	6	0	15	1.24	2.24
615	Ironbound Rd/News Rd	SR 5 - John Tyler Hwy	Rte 5000 - Monticello Ave	25	18	0	43	1.97	3.62
615	Ironbound Rd	SR 321 - Monticello Ave	Rte 616 - Strawberry Plains Rd	4	7	0	11	3.24	7.37
615	Ironbound Rd	Rte 616 - Strawberry Plains Rd	SR 321 - Monticello Ave	3	2	0	5	1.99	3.58
615	Ironbound Rd	SR 321 - Monticello Ave	Williamsburg CL	10	17	2	29	1.97	5.78
359	Jamestown Festival Pkwy	Colonial Pkwy	SR 31 - Jamestown Rd	0	0	0	0	0.00	0.00
31	Jamestown Rd	Jamestown Ferry	Rte 681 - Sandy Bay Rd	19	11	0	30	1.26	2.19
31	Jamestown Rd	Rte 681 - Sandy Bay Rd	Williamsburg CL	32	26	0	58	1.59	3.01
5	John Tyler Memorial Hwy	Charles City CL	Rte 5000 - Monticello Ave	6	8	1	15	1.79	5.01
5	John Tyler Memorial Hwy	Rte 5000 - Monticello Ave	Rte 614 - Centerville Rd	27	9	0	36	2.39	3.58
5	John Tyler Memorial Hwy	Rte 614 - Centerville Rd	Rte 615 - Ironbound Rd	20	15	0	35	1.16	2.15
5	John Tyler Memorial Hwy	Rte 615 - Ironbound Rd	SR 199	27	30	1	58	1.78	3.96
611	Jolly Pond Rd	Rte 632 - Cranston's Mill Pond Rd	Rte 614 - Centerville Rd	8	6	0	14	5.32	9.89
617	Lake Powell Rd	Treasure Island Rd	Rte 700 - Brookwood Dr	6	2	0	8	2.66	3.99
612	Longhill Rd	Rte 614 - Centerville Rd	Rte 658 - Olde Towne Rd	41	39	0	80	2.44	4.83
612	Longhill Rd	Rte 658 - Olde Towne Rd	SR 199	51	50	0	101	5.30	10.56
612	Longhill Rd	SR 199	Rte 615 - Depue Dr	13	7	0	20	2.31	3.93
612	Longhill Rd	Rte 615 - Depue Dr	Williamsburg CL	2	7	0	9	1.85	4.74
143	Merrimac Trail	York CL	Rte 641 - Penniman Rd/York CL	43	30	1	74	2.38	4.66
143	Merrimac Trail	Newport News CL	York CL	37	32	0	69	1.49	2.88
5000	Monticello Ave	SR 5 - John Tyler Hwy	Rte 614 - Centerville Rd	4	2	0	6	0.79	1.31
5000	Monticello Ave	Rte 614 - Centerville Rd	Rte 613 - News Road	22	20	0	42	0.97	1.89
5000	Monticello Ave	Rte 613 - News Road	SR 199	58	47	1	106	2.72	5.42
321	Monticello Ave	SR 199	Rte 615 - Ironbound Rd	93	79	0	172	4.32	8.28
646	Newman Rd	York CL	Rte 606 - Riverview Rd	4	2	0	6	1.58	2.63

FIGURE 13 – ROADWAY SEGMENT CRASH AND EPDO RATES IN THE HISTORIC TRIANGLE, 2013-2017

Source: HRTPO analysis of VDOT data.

JAMES CITY COUNTY

Route #	Facility	Segment From	Segment To	PDO Crashes	INJ Crashes	FAT Crashes	Total Crashes	Crashes per MVMT	EPDO per MVMT
613	News Rd	Rte 614 - Centerville Rd	Powhatan Secondary	15	12	2	29	1.82	4.71
613	News Rd	Powhatan Secondary	Rte 5000 - Monticello Ave	10	11	0	21	2.13	4.35
30	Old Stage Hwy	New Kent CL	I-64	41	32	2	75	1.82	3.91
658	Olde Towne Rd	Rte 612 - Longhill Rd	US 60 - Richmond Rd	49	38	0	87	3.94	7.38
60	Pocahontas Trail	Williamsburg CL	SR 199	14	16	0	30	1.46	3.01
60	Pocahontas Trail	York CL	Newport News CL	39	46	2	87	1.26	2.92
60	Richmond Rd	New Kent CL	SR 30 - Barhamsville Rd	43	32	5	80	1.44	3.58
60	Richmond Rd	SR 30 - Barhamsville Rd	Rte 607 - Croaker Rd	42	33	1	76	0.88	1.76
60	Richmond Rd	Rte 607 - Croaker Rd	Rte 646 - Lightfoot Rd	86	66	0	152	1.61	3.00
60	Richmond Rd	Rte 646 - Lightfoot Rd	SR 199	43	30	0	73	5.49	10.01
60	Richmond Rd	SR 199	Williamsburg CL	67	66	0	133	2.41	4.80
30	Rochambeau Dr	US 60 - Richmond Rd	Rte 607 - Croaker Rd	21	24	0	45	0.99	2.04
199	SR 199	US 60 - Richmond Rd	Rte 612 - Longhill Rd	52	32	0	84	0.74	1.31
199	SR 199	Rte 612 - Longhill Rd	SR 321 - Monticello Ave	33	17	0	50	0.51	0.85
199	SR 199	SR 321 - Monticello Ave	SR 5 - John Tyler Hwy	35	19	0	54	0.70	1.19
199	SR 199	SR 5 - John Tyler Hwy	Williamsburg CL	15	18	0	33	2.40	5.02
199	SR 199	Williamsburg CL	Brookwood Dr	11	10	0	21	2.99	5.83
199	SR 199	Brookwood Dr	SR 132 - Henry St	29	23	1	53	0.62	1.28
199	SR 199	SR 132 - Henry St	Mounts Bay Rd	41	19	0	60	0.91	1.48
199	SR 199	Mounts Bay Rd	US 60 - Pocahontas Trail/York CL	36	21	0	57	0.84	1.46
681	Sandy Bay Rd	SR 31 - Jamestown Rd	Rte 615 - Ironbound Rd	2	2	0	4	1.74	3.48
616	Strawberry Plains Rd	SR 5 - John Tyler Hwy	Rte 615 - Ironbound Rd	16	15	0	31	1.75	3.44

WILLIAMSBURG

Route #	Facility	Segment From	Segment To	PDO Crashes	INJ Crashes	FAT Crashes	Total Crashes	Crashes per MVMT	EPDO per MVMT
5	Boundary St	Jamestown Rd	Francis St	4	4	0	8	6.99	13.97
60	Bypass Rd	Richmond Rd	York CL	13	10	0	23	4.89	9.15
60	Bypass Rd	SR 132 - Henry St	SR 5 - Capitol Landing Rd	15	16	0	31	1.71	3.47
5	Capitol Landing Rd	US 60 - Bypass Rd	SR 143 - Merrimac Trail	7	16	0	23	3.01	7.21
-	Colonial Pkwy	James City CL	York CL	1	1	0	2	0.07	0.15
5	Francis St	Boundary St	SR 132 - Henry St	8	6	0	14	13.11	24.34
7075	Francis St	SR 132 - Henry St	US 60 - Page St	14	4	0	18	1.96	2.83
132	Henry St	SR 199	Francis St	9	6	0	15	1.54	2.78
5	Henry St	Francis St	SR 5 - Lafayette St	8	4	0	12	3.70	6.16
132	Henry St	SR 5 - Lafayette St	SR 132 Y	12	16	0	28	6.31	13.53
7081	Ironbound Rd	James City CL	Depue Dr	5	2	0	7	0.73	1.15
7081	Ironbound Rd	Depue Dr	Longhill Rd	20	9	0	29	3.04	4.92
7081	Ironbound Rd	Longhill Rd	Richmond Rd	3	3	0	6	5.22	10.43
31	Jamestown Rd	James City CL	SR 199	9	10	0	19	16.46	33.79
5	Jamestown Rd	SR 199	John Tyler Hwy	15	11	0	26	6.20	11.45
5	Jamestown Rd	John Tyler Hwy	College Creek	4	3	0	7	0.71	1.31

FIGURE 13 (CONTINUED) – ROADWAY SEGMENT CRASH AND EPDO RATES IN THE HISTORIC TRIANGLE, 2013-2017

Source: HRTPO analysis of VDOT data.

WILLIAMSBURG

Route #	Facility	Segment From	Segment To	PDO Crashes	INJ Crashes	FAT Crashes	Total Crashes	Crashes per MVMT	EPDO per MVMT
5	Jamestown Rd	College Creek	Boundary St	23	16	0	39	2.48	4.52
7077	Lafayette St	Richmond Rd	SR 132 - Henry St	19	21	0	40	2.45	5.02
5	Lafayette St	SR 132 - Henry St	US 60 - Page St	20	14	0	34	1.86	3.40
7082	Longhill Rd	Ironbound Rd	James City CL	7	4	0	11	2.20	3.81
143	Merrimac Trail	York CL (South)	SR 5 - Capital Landing Rd	17	9	0	26	2.36	4.00
143	Merrimac Trail	SR 5 - Capital Landing Rd	York CL (North)	4	5	0	9	1.48	3.12
321	Monticello Ave	Rte 615 - Ironbound Rd	Richmond Rd	46	31	0	77	2.22	4.02
60	Page St	SR 5 - Capitol Landing Rd	Second St	8	7	0	15	1.30	2.51
60	Page St	Second St	Lafayette St	9	9	0	18	2.94	5.88
7086	Penniman Rd	Page St	York CL	4	4	0	8	3.10	6.21
-	Quarterpath Rd	SR 199	US 60 - York St	5	3	0	8	2.77	4.84
60	Richmond Rd	James City CL	Ironbound Rd	46	49	0	95	1.88	3.82
60	Richmond Rd	Ironbound Rd	Bypass Rd	27	11	0	38	2.75	4.35
7075	Richmond Rd	Bypass Rd	Monticello Ave	24	7	0	31	2.41	3.51
7075	Richmond Rd	Monticello Ave	Brooks St	12	10	0	22	3.20	6.10
7075	Richmond Rd	Brooks St	Boundary St	20	22	0	42	3.46	7.09
132	SR 132	SR 132 Y	US 60 - Bypass Rd	8	7	0	15	6.23	12.05
132	SR 132 Y	Colonial Parkway	SR 132 - Henry St	6	3	0	9	3.09	5.15
199	SR 199	James City CL (West)	SR 31 - Jamestown Rd	28	19	0	47	3.14	5.67
199	SR 199	SR 31 - Jamestown Rd	James City CL (East)	15	12	0	27	2.64	4.99
7079	Second St	Page St	York CL	18	15	0	33	3.34	6.37
-	Treyburn Dr	Monticello Ave	Ironbound Rd	6	0	0	6	1.50	1.50
60	York St	Lafayette St	James City CL	6	15	0	21	1.65	4.01

YORK COUNTY

Route #	Facility	Segment From	Segment To	PDO Crashes	INJ Crashes	FAT Crashes	Total Crashes	Crashes per MVMT	EPDO per MVMT
645	Airport Rd	Rte 603 - Mooretown Rd	FR-137 - E. Rochambeau Dr	26	17	1	44	2.21	4.46
1012	Alexander Hamilton Blvd	US 17 - GW Mem Hwy	Rte 1020 - Ballard St	0	0	0	0	0.00	0.00
1020	Ballard St	Water St	Colonial Pkwy	2	0	0	2	0.92	0.92
1020	Ballard St	Colonial Pkwy	SR 238 - Cook Rd	1	2	0	3	2.03	4.74
238	Ballard St	SR 238 - Cook Rd	Coast Guard Training Center	1	0	0	1	0.13	0.13
604	Barlow Rd	Rte 646 - Newman Rd	Rte 797 - Skimino Rd	4	1	0	5	1.02	1.43
604	Barlow Rd	Rte 797 - Skimino Rd	Rte F-137 - E. Rochambeau Dr	4	3	0	7	6.55	12.17
600	Big Bethel Rd	Hampton CL	SR 134 - Hampton Hwy	14	14	0	28	1.53	3.06
600	Big Bethel Rd	SR 134 - Hampton Hwy	SR 171 - Victory Blvd	14	9	0	23	2.39	4.26
60	Bypass Rd	Williamsburg CL	Rte 713 - Waller Mill Rd	11	5	0	16	1.97	3.20
60	Bypass Rd	Rte 713 - Waller Mill Rd	SR 132	45	38	1	84	2.23	4.55
143	Capitol Landing Rd	Williamsburg CL	SR 132	7	1	0	8	2.21	2.77
143	Capitol Landing Rd	SR 132	I-64	46	24	0	70	3.47	5.85
143	Capitol Landing Rd	I-64	Camp Peary Main Gate	1	0	0	1	0.88	0.88
782	Carys Chapel Rd	Poquoson CL	SR 171 - Victory Blvd	7	2	0	9	0.77	1.12
-	Colonial Pkwy	Williamsburg CL	Ballard St	2	0	0	2	0.02	0.02
704	Cook Rd	US 17 - GW Mem Hwy	Rte 634 - Old York Hampton Hw	15	10	0	25	3.71	6.68
704	Cook Rd	Rte 634 - Old York Hampton Hw	SR 238 - Goosley Rd	15	9	1	25	1.61	3.47

FIGURE 13 (CONTINUED) – ROADWAY SEGMENT CRASH AND EPDO RATES IN THE HISTORIC TRIANGLE, 2013-2017

Source: HRTPO analysis of VDOT data.

YORK COUNTY

Route #	Facility	Segment From	Segment To	PDO Crashes	INJ Crashes	FAT Crashes	Total Crashes	Crashes per MVMT	EPDO per MVMT
238	Cook Rd	SR 238 - Goosley Rd	Ballard St	4	1	0	5	1.48	2.07
1763	Coventry Blvd	US 17 - GW Mem Hwy	Rte 1750 - Owen Davis Blvd	10	6	0	16	1.41	2.46
621	Dare Rd	US 17 - GW Mem Hwy	Rte 620 - Lakeside Dr	12	8	0	20	1.51	2.72
173	Denbigh Blvd	Newport News CL	US 17 - GW Mem Hwy	39	24	1	64	1.07	2.06
F-137	E Rochambeau Dr	Rte 603 - Mooretown Rd	SR 143 Capitol Landing Rd	73	54	1	128	1.39	2.68
782	E Yorktown Rd	SR 171 - Victory Blvd	Poquoson CL	1	2	0	3	1.06	2.48
105	Fort Eustis Blvd	Newport News CL	US 17 - GW Mem Hwy	27	11	0	38	0.55	0.87
1050	Fort Eustis Blvd Ext	US 17 - GW Mem Hwy	Rte 634 - Old York Hampton Hw	10	4	0	14	5.16	8.10
17	George Washington Mem Hwy	Newport News CL	SR 171 - Victory Blvd	91	39	0	130	1.90	3.04
17	George Washington Mem Hwy	SR 171 - Victory Blvd	SR 134 - Hampton Hwy	110	39	0	149	2.52	3.84
17	George Washington Mem Hwy	SR 134 - Hampton Hwy	Rte 621 - Dare Rd	210	99	0	309	1.50	2.46
17	George Washington Mem Hwy	Rte 621 - Dare Rd	SR 173 - Denbigh Blvd	88	50	1	139	2.07	3.73
17	George Washington Mem Hwy	SR 173 - Denbigh Blvd	SR 105 - Fort Eustis Blvd	105	45	0	150	1.79	2.87
17	George Washington Mem Hwy	SR 105 - Fort Eustis Blvd	Rte 704 - Cook Rd	66	30	0	96	2.75	4.47
17	George Washington Mem Hwy	Rte 704 - Cook Rd	SR 238 - Goosley Rd	56	36	0	92	0.73	1.29
17	George Washington Mem Hwy	SR 238 - Goosley Rd	Colonial Pkwy	18	8	0	26	1.97	3.18
17	George Washington Mem Hwy	Colonial Pkwy	Gloucester CL	28	6	0	34	0.77	1.04
173	Goodwin Neck Rd	US 17 - GW Mem Hwy	Rte 630 - Wolf Trap Rd	14	8	0	22	1.29	2.23
173	Goodwin Neck Rd	Rte 630 - Wolf Trap Rd	Back Creek Rd	7	4	1	12	1.61	4.15
173	Goodwin Neck Rd	Back Creek Rd	Dandy Loop Rd	10	3	0	13	1.81	2.65
238	Goosley Rd	SR 238 - Old Williamsburg Rd	US 17 - George Washington Hwy	16	10	0	26	2.04	3.61
238	Goosley Rd	US 17 - GW Mem Hwy	Rte 704 - Cook Rd	5	2	0	7	5.22	8.20
134	Hampton Hwy	US 17 - GW Mem Hwy	SR 171 - Victory Blvd	39	35	1	75	2.59	5.38
134	Hampton Hwy	SR 171 - Victory Blvd	Rte 600 - Big Bethel Rd	61	39	4	104	1.59	3.46
134	Hampton Hwy	Rte 600 - Big Bethel Rd	Hampton CL	51	36	0	87	1.16	2.12
718	Hornsbyville Rd	Rte 634 - Old York Hampton Hw	SR 173 - Goodwin Neck Rd	10	6	0	16	1.97	3.45
716	Hubbard Ln	Rte 641 - Penniman Rd	Colonial Pkwy	6	2	0	8	1.11	1.66
64	I-64	James City CL	SR 199/Rte 646 - Newman Rd	52	25	1	78	0.56	1.00
64	I-64	SR 199/Rte 646 - Newman Rd	SR 143 - Camp Peary Rd	156	86	3	245	0.49	0.90
64	I-64	SR 143 - Camp Peary Rd	SR 199	222	105	1	328	0.72	1.21
64	I-64	SR 199	Busch Gardens Interchange	137	49	2	188	1.11	1.82
64	I-64	Busch Gardens Interchange	James City CL	76	31	0	107	0.83	1.31
1800	Kiln Creek Pkwy	ECL Newport News; Edgewater D	SR 171 - Victory Blvd	8	4	1	13	0.83	2.04
620	Lakeside Dr	US 17 - GW Mem Hwy	Rte 614 - Showalter Rd	15	7	0	22	2.93	4.80
620	Lakeside Dr	Rte 614 - Showalter Rd	Rte 621 - Dare Rd	13	5	0	18	1.37	2.13
646	Lightfoot Rd	US 60 - Richmond Rd	Mooretown Rd	19	8	0	27	0.86	1.37
1001	Mathews St	US 17 - GW Mem Hwy	Water St	3	1	0	4	3.30	4.95
143	Merrimac Trail	James City CL	SR 199	46	44	0	90	1.17	2.32
143	Merrimac Trail	Penniman Rd	Second St	26	18	0	44	6.69	12.17
143	Merrimac Trail	Second St	Williamsburg CL	3	2	0	5	0.50	0.90
603	Mooretown Rd	Rte 713 - Waller Mill Rd	Rte 645 - Airport Rd	16	9	0	25	1.13	1.94
603	Mooretown Rd	Rte 645 - Airport Rd	Old Mooretown Rd	13	16	0	29	1.26	2.64
603	Mooretown Rd	Old Mooretown Rd	SR 199	30	15	0	45	3.04	5.06
603	Mooretown Rd	SR 199	Rte 646 - Lightfoot Rd	12	4	0	16	6.84	10.26

FIGURE 13 (CONTINUED) – ROADWAY SEGMENT CRASH AND EPDO RATES IN THE HISTORIC TRIANGLE, 2013-2017

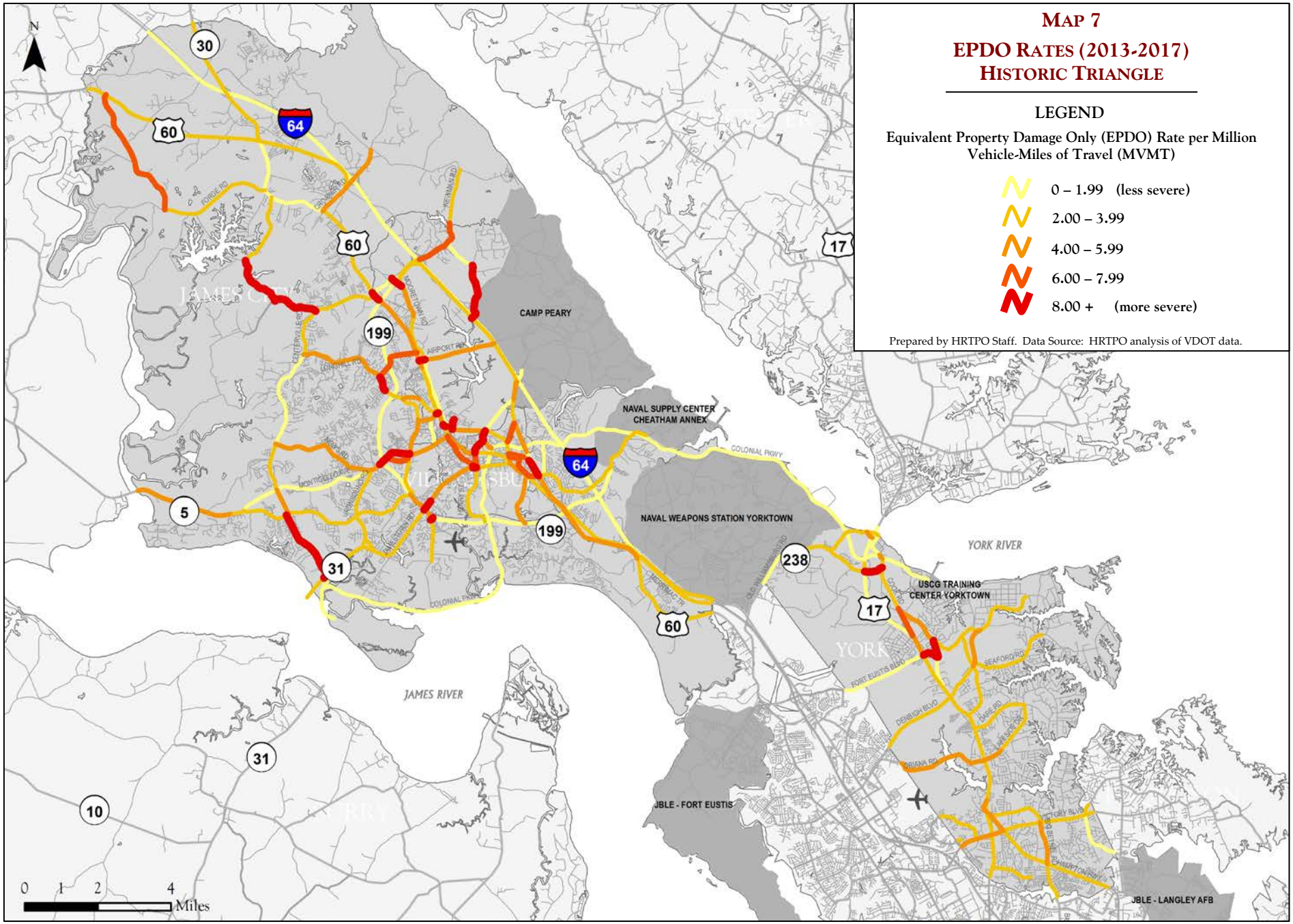
Source: HRTPO analysis of VDOT data.

YORK COUNTY

Route #	Facility	Segment From	Segment To	PDO Crashes	INJ Crashes	FAT Crashes	Total Crashes	Crashes per MVMT	EPDO per MVMT
646	Newman Rd	I-64	James City CL	14	10	0	24	3.61	6.62
238	Old Williamsburg Rd	Newport News CL	Rte 660 - Baptist Rd	7	11	0	18	0.85	1.89
238	Old Williamsburg Rd	Rte 660 - Baptist Rd	SR 238 - Goosley Rd	11	12	0	23	1.63	3.34
1020	Old Williamsburg Rd	SR 238 - Goosley Rd	Colonial Pkwy	4	3	0	7	1.38	2.56
634	Old York Hampton Hwy	US 17 - GW Mem Hwy	Rte 1050 - Fort Eustis Blvd Ext	8	1	0	9	1.03	1.26
634	Old York Hampton Hwy	Rte 1050 - Fort Eustis Blvd Ext	Rte 718 - Hornsbyville Rd	3	2	0	5	9.36	16.85
634	Old York Hampton Hwy	Rte 718 - Hornsbyville Rd	Rte 704 - Cook Rd	6	6	0	12	2.30	4.60
620	Oriana Rd	Newport News CL	US 17 - GW Mem Hwy	41	25	0	66	2.31	4.05
641	Penniman Rd	Williamsburg CL	SR 143 - Merrimac Trail	10	4	0	14	4.34	6.82
641	Penniman Rd	SR 143 - Merrimac Trail	SR 199	23	12	0	35	1.34	2.26
641	Penniman Rd	SR 199	Colonial Pkwy	8	6	1	15	1.29	3.26
60	Pocahontas Trail	SR 199	James City CL	73	58	0	131	2.94	5.54
132	SR 132	US 60 - Bypass Rd	SR 143 - Capitol Landing Rd	16	3	0	19	0.95	1.25
199	SR 199	I-64	Rte 603 - Mooretown Rd	40	19	0	59	1.84	3.02
199	SR 199	Rte 603 - Mooretown Rd	US 60 - Richmond Rd/JCC CL	33	12	0	45	0.98	1.51
199	SR 199	SR 143 - Merrimac Trail/JCC CL	I-64	18	11	0	29	0.66	1.17
199	SR 199	I-64	Rte 641 - Penniman Rd	14	8	0	22	0.88	1.52
622	Seaford Rd	SR 173 - Goodwin Neck Rd	Rte 718 - Back Creek Rd	26	12	1	39	1.62	3.07
162	Second St	Williamsburg CL	SR 143 - Merrimac Trail	4	9	0	13	2.18	5.20
171	Victory Blvd	Newport News CL	US 17 - George Washington Hwy	122	74	0	196	3.13	5.50
171	Victory Blvd	US 17 - GW Mem Hwy	SR 134 - Hampton Hwy	36	20	0	56	3.13	5.36
171	Victory Blvd	SR 134 - Hampton Hwy	Rte 600 - Big Bethel Rd	61	20	0	81	2.39	3.57
171	Victory Blvd	Rte 600 - Big Bethel Rd	Poquoson CL	53	30	0	83	1.67	2.88
713	Waller Mill Rd	US 60 - Bypass Rd	Rte 603 - Mooretown Rd	11	5	0	16	11.76	19.11
1020	Water St	Colonial Pkwy	Ballard St	3	3	0	6	1.33	2.65
630	Wolf Trap Rd	US 17 - GW Mem Hwy	SR 173 - Goodwin Neck Rd	22	6	1	29	1.54	2.75
630	Wolf Trap Rd	SR 173 Goodwin Neck Rd	Rte 718 - Hornsbyville Rd	2	2	0	4	1.12	2.24
706	Yorktown Rd	SR 134 Hampton Hwy	Rte 600 - Big Bethel Rd	17	7	0	24	1.52	2.40

FIGURE 13 (CONTINUED) – ROADWAY SEGMENT CRASH AND EPDO RATES IN THE HISTORIC TRIANGLE, 2013-2017

Source: HRTPO analysis of VDOT data.


MAP 7
EPDO RATES (2013-2017)
HISTORIC TRIANGLE
LEGEND
Equivalent Property Damage Only (EPDO) Rate per Million Vehicle-Miles of Travel (MVMT)
0 – 1.99 (less severe)
2.00 – 3.99
4.00 – 5.99
6.00 – 7.99
8.00 + (more severe)
Prepared by HRTPO Staff. Data Source: HRTPO analysis of VDOT data.
N
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
0 1 2 4 Miles

Potential for Safety Improvement

In addition to analyzing the number and rate of crashes, new methods have been created recently to improve planning for roadway safety. One new method to determine the most hazardous locations is to examine the difference between the number of crashes that occurred at a location and compare it to the number of crashes that would be predicted to occur based on the location's traffic volumes, area type, segment length, intersection control type, etc. This difference is referred to as the Potential for Safety Improvement (PSI).

VDOT has started using PSI as a method for network screening of locations for allocating Highway Safety Improvement Program (HSIP) funding. VDOT has prepared a list of the top intersections and top miles of roadway in terms of PSI for each VDOT District. The intersections in the Historic Triangle with the highest PSI for the years 2013-2017 are shown in **Figure 14**, and the roadway segments with the highest PSI are shown in **Figure 15**.

The intersections in the Historic Triangle with the highest PSI are Monticello Avenue at Casey Boulevard, George Washington Memorial Highway at Rich Road, Longhill Road at Olde Towne Road, and Jamestown Road at Route 199. The roadway segments with the highest PSI include two sections of I-64 near the Yorktown Naval Weapons Station, a section of Bypass Road east of Richmond Road, and a section of Monticello Avenue near the New Town development.

	Locality	Intersection	Hampton Roads District Rank - Intersections
1	James City	Monticello Ave at Ironbound Rd/Casey Blvd	33
2	York	George Washington Mem Hwy at Rich Rd	60
3	James City	Longhill Rd at Olde Towne Rd	67
4	Williamsburg	Jamestown Rd at Route 199	69
5	York	George Washington Mem Hwy at Theatre Rd	74
6	James City	Richmond Rd at Airport Rd	76
7	York	George Washington Mem Hwy at Burts Rd/Grafton Station Ln	94
8	Williamsburg	Route 132 at Route 132Y	105
9	York	Hampton Hwy at Yorktown Rd	108
10	JCC/York	Merrimac Trail at Penniman Rd	145
11	York	Richmond Rd at Lightfoot Rd	146
12	James City	John Tyler Hwy at Centerville Rd	161
13	James City	Richmond Rd at Olde Towne Rd	167
14	York	I-64 EB Off Ramp at Route 143 (Exit 238)	174
15	James City	I-64 EB Off Ramp at Route 143 (Exit 247)	179
16	York	East Rochambeau Dr at Airport Rd	196

Figure 14 – Intersections in the Historic Triangle with the Highest Potential for Safety Improvement (PSI), 2013-2017

Source: VDOT.

	Locality	Facility	Hampton Roads District Rank - Segments
1	James City	I-64 WB from MM 244.66 to MM 247.04	93
2	James City	I-64 EB from MM 246.66 to MM 246.96	99
3	York	Bypass Rd from Commons Way to Chelsea Rd	154
4	James City	Monticello Ave from Ironbound Rd/Casey Blvd to New Town Ave	189
5	Williamsburg	Richmond Rd from WMB General Store to Ironbound Rd	235
6	York	Victory Blvd from Kiln Creek Pkwy/Village Ave to Wal-Mart Entrance	254
7	York	Pocahontas Trail from Route 199 to Busch Way	263
8	York	Victory Blvd from Wal-Mart Entrance to GW Hwy	291
9	York	Pocahontas Trail from Busch Gardens Interchange to Busch Rd	294
10	James City	Monticello Ave from New Town Ave to Ironbound Rd	300
11	James City	Route 199 from Halfway Creek to Mounts Bay Rd	309
12	Williamsburg	Richmond Rd from Yankee Candle to WMB General Store	311
13	York	George Washington Mem Hwy from Ella Talyor Rd to Sports Way	315
14	York	I-64 EB at the Route 199 South Interchange	354
15	Williamsburg	Monticello Ave from Mount Vernon Ave to Garrison Dr	367
16	James City	Richmond Rd from Ware Ln to Pottery Entrance	397

Figure 15 – Roadway Segments in the Historic Triangle with the Highest Potential for Safety Improvement (PSI), 2013-2017

Source: VDOT.

COMMUTING PATTERNS

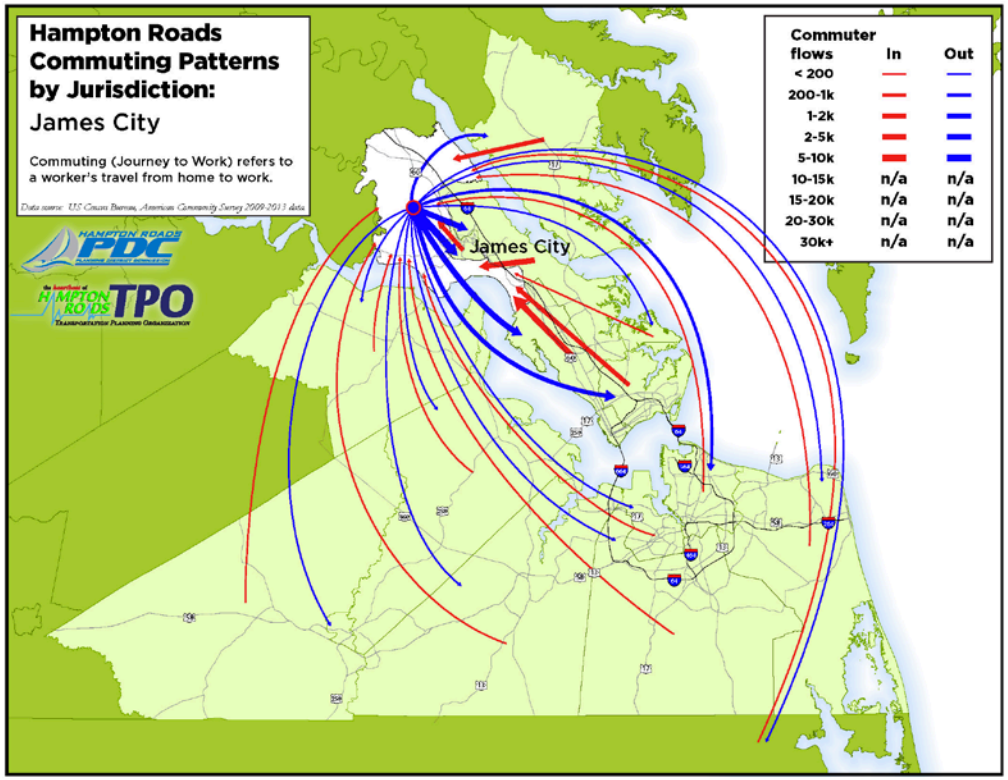
The U.S. Census Bureau's American Community Survey (ACS) helps illustrate the degree to which localities are inter-connected by detailing commuting patterns between localities. **Maps 8, 9, and 10** illustrate the journeys commuters take to and from James City County, Williamsburg and York County respectively each day.

Approximately 30,100 residents of James City County commuted to work every day in the period between 2009 and 2013, and about 57% of these residents (17,300) commuted outside of County borders to work. The top three destinations residents of James City County commuted to were:

- Williamsburg – 5,047 commuters (17% of commuters outside of County borders)
- York County – 3,786 commuters (13% of commuters outside of County borders)
- Newport News – 3,561 commuters (12% of commuters outside of County borders)

Similarly, 26,212 people commuted to locations within James City County for work every day during this period and about 51% (13,463) were residents from other localities. The top three localities from which people commuted to James City County were:

- Newport News – 3,441 commuters (26% of commuters from other localities)
- York County – 2,114 commuters (16% of commuters from other localities)
- Williamsburg – 1,315 commuters (10% of commuters from other localities)



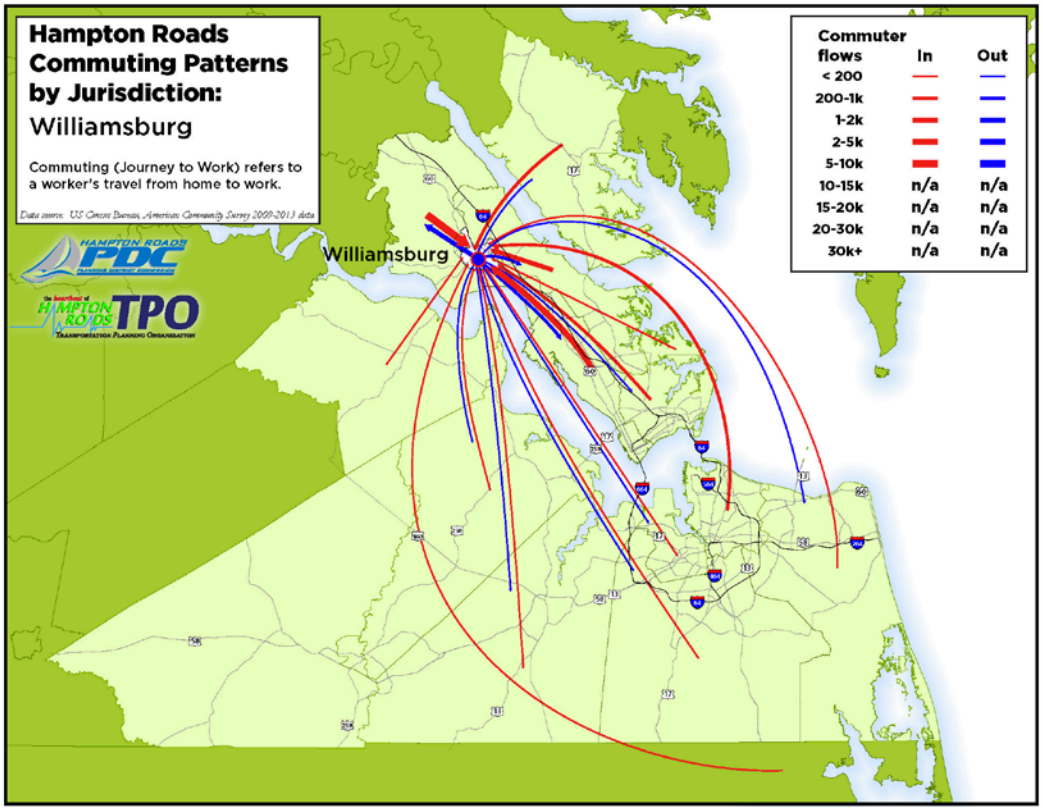
MAP 8 – JAMES CITY COUNTY COMMUTING PATTERNS (2009-2013)
Source: HRTPO analysis of Census Bureau Data

For Williamsburg (**Map 9**), approximately 5,900 residents commuted to work every day in the period between 2009 and 2013, and about 49% of these residents (2,944) commuted outside of the City's borders to work. The top three destinations residents of Williamsburg commuted to were:

- James City County – 1,315 commuters (45% of commuters outside of City borders)
- York County – 571 commuters (19% of commuters outside of City borders)
- Newport News – 494 commuters (17% of commuters outside of City borders)

Likewise, 14,445 people commuted to locations within Williamsburg for work every day during this period and about 79% (11,470) were residents from other localities. The top three localities from which people commuted to Williamsburg were:

- James City County – 5,047 commuters (44% of commuters from other localities)
- Newport News – 2,041 commuters (18% of commuters from other localities)
- York County – 1,480 commuters (13% of commuters from other localities)



MAP 9 – WILLIAMSBURG COMMUTING PATTERNS (2009-2013)

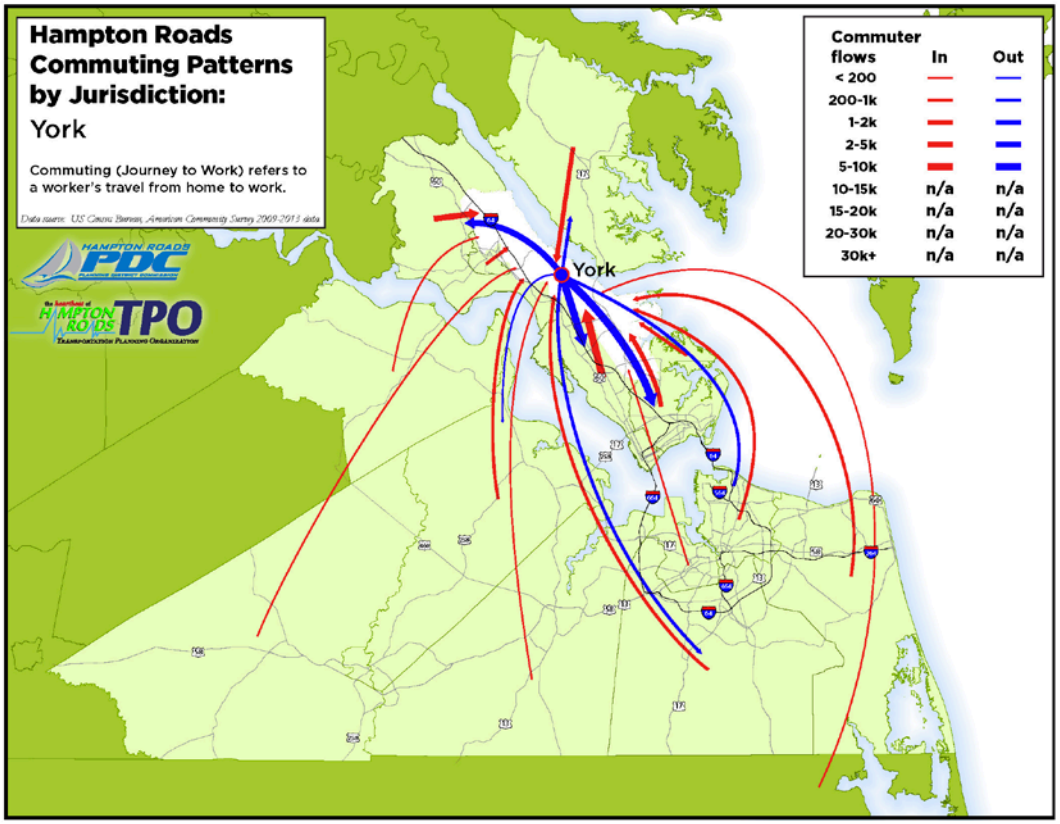
Source: HRTPO analysis of Census Bureau Data

Finally, around 32,300 York County residents commuted to work every day in the period between 2009 and 2013, and approximately 73% of these residents (23,604) commuted outside of County borders to work (**Map 10**). The top three destinations residents of York County commuted to were:

- Newport News – 8,947 commuters (38% of commuters outside of County borders)
- Hampton – 7,287 (31% of commuters outside of County borders)
- James City County – 2,114 commuters (9% of commuters outside of County borders)

Conversely, 25,039 people commuted to locations within York County for work every day during this period and about 65% (16,284) were residents from other localities. The top three localities from which people commuted to York County were:

- Newport News – 5,418 commuters (32% of commuters outside of County borders)
- James City County – 3,786 commuters (23% of commuters outside of County borders)
- Hampton – 1,402 commuters (9% of commuters outside of County borders)



MAP 10 – YORK COUNTY COMMUTING PATTERNS (2009-2013)

Source: HRTPO analysis of Census Bureau Data

Active Transportation

Active transportation is defined as including all forms of human-powered transportation. The most common forms of active transportation are bicycling and walking, but it also includes using a wheelchair and activities such as in-line skating or skateboarding. Active transportation is popular in the Historic Triangle, particularly as a means of recreation.

According to the Census Bureau, 3% of residents in the Historic Triangle walked or used a bicycle to commute to work in 2013-2017. Walking and bicycling to work is prevalent in the City of Williamsburg, with 2.8% of the city's residents bicycling to work and 15.0% of the city's residents walking to work during this time period.

The Historic Triangle Bicycle Advisory Committee (HTBAC) was formed in 1993, in order to recommend bikeway projects for implementation in accordance with the adopted Regional Bikeways Plan, recommend amendments to this plan, and develop and implement promotional, informational and safety initiatives related to active transportation. The HTBAC, which meets quarterly, consists of citizen appointees, staff from each of the three localities, National Park Service staff, the Colonial Williamsburg Foundation and the College of William and Mary.

There are approximately 48 miles of bikeway facilities in the Historic Triangle, which are shown in **Map 11** on page 43. These bikeways include:

- Multi-use paths – These facilities, which may be paved or unpaved, are physically separated from the roadway and are prohibited for use by motorized traffic.

- Bike Lanes – Roadways that have been designated by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists.

- Shared Roadways – Roadways that are signed as a bicycle route but do not have a portion of the roadway that is either reserved exclusively for bicyclists or can accommodate bicyclists and motorized traffic simultaneously.

Of the 48 miles of bikeways in the Historic Triangle, 21 miles are in James City County, 10 miles are in Williamsburg, and 16 miles are in York County. In addition, there are 40 miles of shared roadway facilities on roads maintained by the National Park Service (NPS), including the Colonial Parkway, Jamestown Island Tour Road, and Yorktown Battlefield Tour Road, all heavily used by bicyclists.

Numerous high profile bicycle facilities are located in the area. The Virginia Capital Trail connects Richmond and Williamsburg, a 54 mile multi-use path. This trail is the product of a successful public-private partnership between the Virginia Department of Transportation (VDOT) and the Virginia Capital Trail Foundation (VCTF), which is a nonprofit organization with the mission to enhance, promote and advocate for the continued development of the Virginia Capital Trail.

Another high profile bicycle facility is Virginia Bicycle Route 76, which is part of U.S. Bicycle Route 76 (which runs from Illinois to Virginia) and the TransAmerica Bike Route (which connects Oregon with Virginia). Virginia Bicycle Route 76 follows the Virginia Capital Trail and the Colonial Parkway before ending in Yorktown.

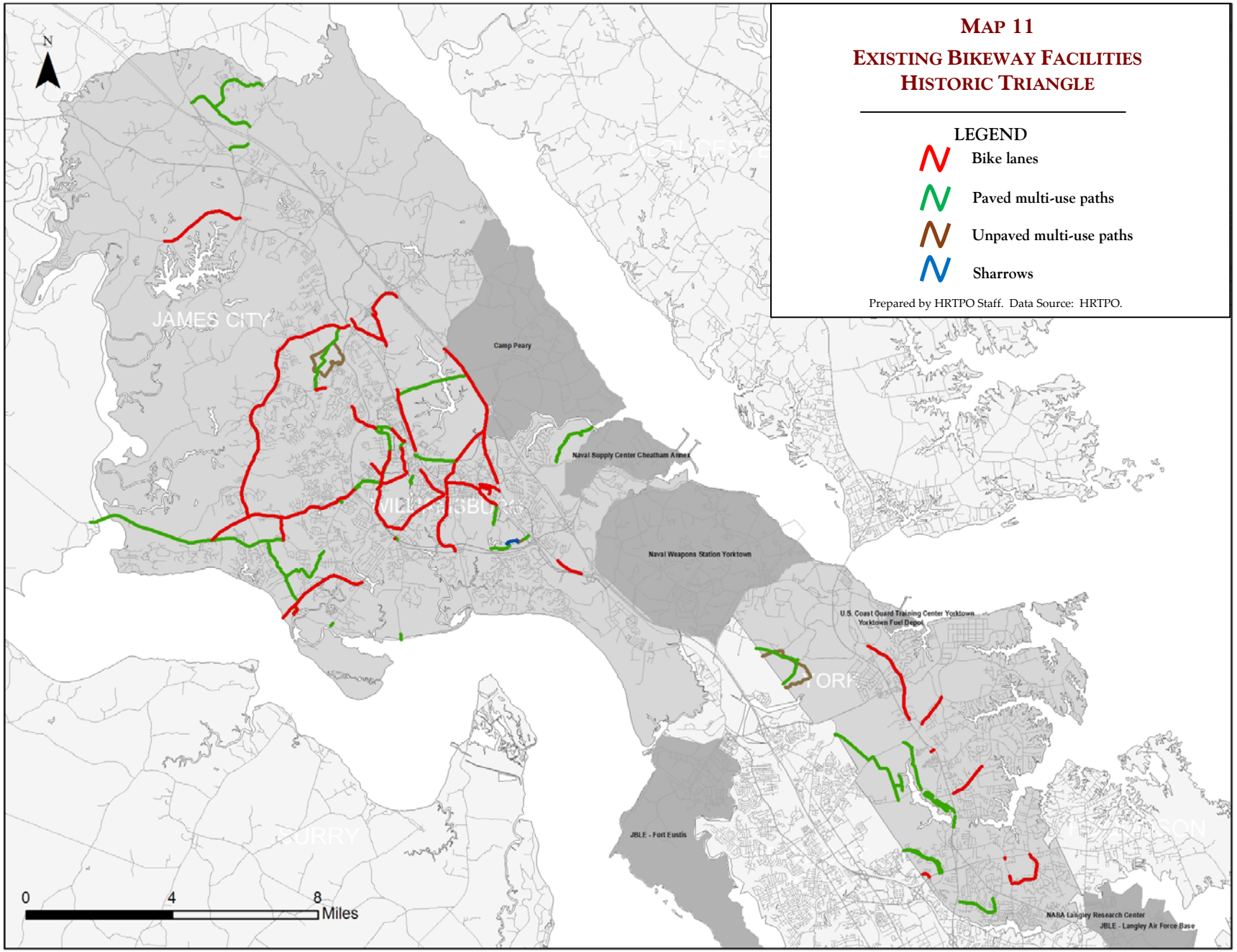
In addition to bikeways, sidewalks that accommodate pedestrians are present in all three localities. Popular locations for pedestrian activity include: Colonial Williamsburg, the College of William and Mary, New Town, Yorktown village, etc.

There have been 21 active transportation projects completed in the study area since 2008 (**Figure 16** on page 42). Four of these projects are in James City County, ten are in Williamsburg, and seven are in York County.

Jurisdiction	UPC	Project	Cost ($thousands)	Year Completed
JCC	104327	Bikeway - Capital Trail Access at John Tyler Hwy & Monticello Ave	$35	2014
JCC	67584	Install Pedestrian Crossing And Curbcut Ramps - Longhill Rd (Rte 612) At Olde Towne Rd (Rte 658)	$5	2013
JCC	67638	Install Pedestrian Crossing And Curbcut Ramps - Monticello Ave (Rte 5000) At News Rd (Rte 613)	$8	2016
JCC	67637	Install Pedestrian Crossing And Curbcut Ramps - John Tyler Hwy (Rte 5) At Kings Way	$5	2017
WMB	-	Bike Lanes - Longhill Rd	$50	2018
WMB	-	Bike Lanes/Road Diet - Second St	$6	2018
WMB	-	Restriping for Bike Lanes - Jamestown Rd from Boundary St to Ukrop Dr	$13	2015
WMB	-	Restriping for Bike Lanes - Richmond Rd from Scotland St to Boundary St	$15	2016
WMB	-	Shoulder Bike Lane - Longhill Rd	$3	2008
WMB	91689	Sidewalk - 5 Sidewalk Project	$207	2010
WMB	102777	Sidewalk - 8 Sidewalk Project	$527	2013
WMB	-	Sidewalk - Parkway Dr from Colonial Parkway to Capitol Landing Road	$282	2017
WMB	102778	Sidewalks - Prince George St and Armistead Ave	$846	2013
WMB	104334	Sidewalks - York St	$881	2014
YC	84484	Bikeway - Capitol Landing Rd from East Rochambeau Dr to Queen's Creek	$290	2012
YC	101276	Construct Paved Shoulders - Cook Rd/Surrender Rd to Colonial Pkwy	$360	2019
YC	101277	Construct Paved Shoulders - East Rochambeau Dr East of Mooretown Road	$40	2015
YC	-	Sidewalk - Ballard Street from York-Poquoson Courthouse to Bacon Street	$137	2018
YC	94543	Construct Sidewalks - Hampton Hwy Construct Sidewalks - Hubbard Ln Construct Sidewalks - Commons Way	$499	2011

FIGURE 16 - RECENT ACTIVE TRANSPORTATION IMPROVEMENTS IN THE HISTORIC TRIANGLE, 2008 TO 2019

Source: VDOT.


MAP 11
EXISTING BIKEWAY FACILITIES
HISTORIC TRIANGLE
LEGEND
Bike lanes
Paved multi-use paths
Unpaved multi-use paths
Sharrows
Prepared by HRTPO Staff. Data Source: HRTPO.
N
JAMES CITY
Camp Peary
Naval Supply Center Cheatham Annex
Naval Weapons Station Yorktown
U.S. Coast Guard Training Center Yorktown
Yorktown Fuel Depot
JBLE - Fort Eustis
NASA Langley Research Center
JBLE - Langley Air Force Base
0
4
8
Miles

RAIL

Amtrak provides intercity passenger rail services along the CSX corridor, which is a part of the Northeast Regional route between Boston and Newport News. There is one station in the Historic Triangle, at the Williamsburg Transportation Center on North Boundary Street in Downtown Williamsburg.

As of 2019 there are two daily northbound trains passing through Williamsburg. One train leaves Williamsburg in the morning (reaching Washington D.C. midday and Boston by late evening) and the other leaves in the afternoon (reaching Washington D.C. in the evening and Boston the next morning). In the southbound direction there are two trains passing through Williamsburg – one in the morning and one in the evening – each day except for Friday. On Friday there are three trains that pass through Williamsburg: one in the morning, one in late afternoon and one in the evening.

Boardings and alightings, which represent the number of people getting on and off of the train at each station, are used to measure intercity rail passenger activity. In Federal Fiscal Year (FFY) 2018, there were 56,354 boardings and alightings at the Williamsburg Amtrak Station (**Figure 17**). The number of passengers at the Williamsburg station has declined from its peak in FFY 2013, but is significantly higher than in FFY 2010.

All of the freight rail corridors in Virginia are privately owned and serve the Port of Virginia in Hampton Roads in some capacity. There is one primary freight corridor that passes through the Historic Triangle that is owned and operated by CSX Transportation. CSX is a Class I railroad that connects the Peninsula with cities and ports throughout the Eastern United States. Freight rail service from the Peninsula has been recently improved by the National Gateway project, which upgraded bridges and tunnels on CSX's network to allow double-stack trains between Mid-Atlantic ports and the Midwest.

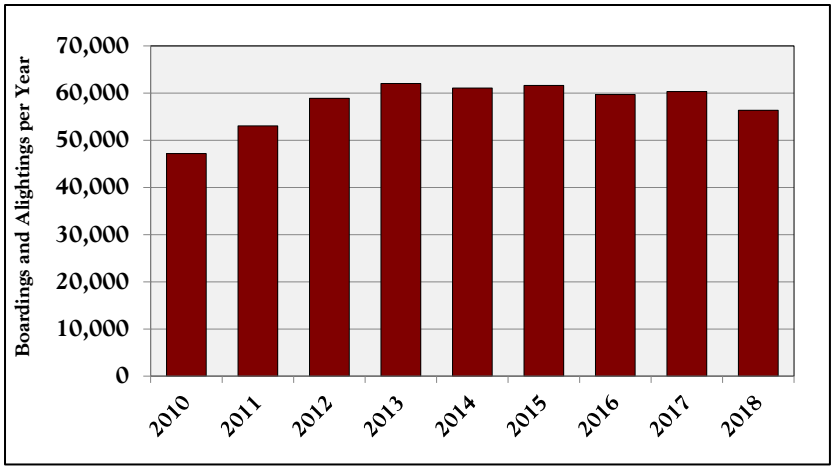
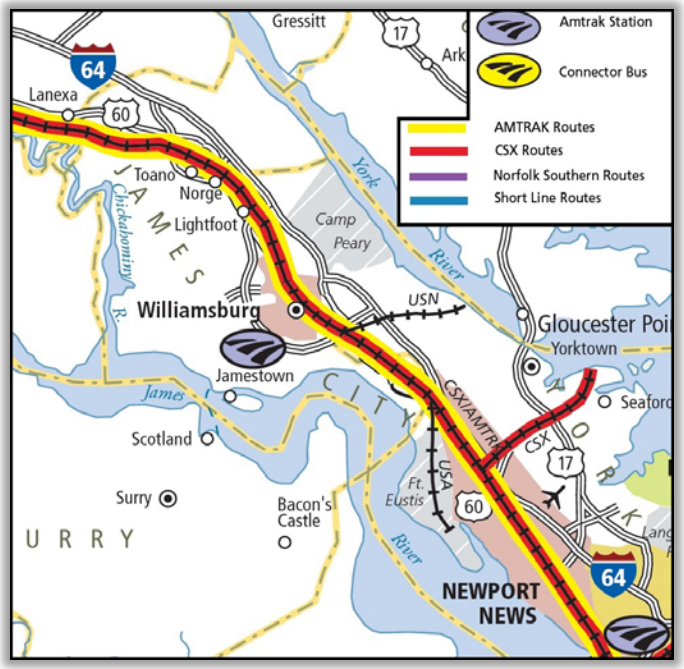


FIGURE 17 - AMTRAK PASSENGER ACTIVITY AT THE WILLIAMSBURG STATION, 2010-2018

Source: Amtrak. Based on Federal Fiscal Year, which run from October 1-September 30.

Map 12 shows the location of the CSX corridor in the Historic Triangle, which includes a spur from the mainline through York County to the Yorktown Power Station on the York River along with a spur to the Yorktown Naval Weapons Station. **Map 13** shows the Virginia Railroad Network, including the CSX railroad network and its interconnectivity with the Historic Triangle.



MAP 12 – HISTORIC TRIANGLE CSX CORRIDOR
Source: VDRPT 2012 Virginia State Rail Map

MAP 13 - VIRGINIA RAILROAD NETWORK
Source: VDRPT 2012 Virginia State Rail Map

PUBLIC TRANSPORTATION

This section includes details on the public transportation services that are currently provided throughout the Historic Triangle, as well as the Park and Ride lots that are maintained by the Virginia Department of Transportation.

TRANSIT

Transit services in James City County, Williamsburg, and northern York County are provided by the Williamsburg Area Transit Authority (WATA). Public transportation in the Historic Triangle began with the introduction of James City County Transit (JCCT) in 1977. The early focus of the program was providing public transportation services for transit-dependent residents, mostly in rural James City County. As the program grew to include additional funding partners, services evolved to meet the needs of an increasingly diverse customer base.

JCCT was changed to Williamsburg Area Transport in 2003 in recognition of its more extensive role in the region. Area stakeholders continued to work toward development of a regional system, finally gaining approval from the Virginia General Assembly in 2006 to form a regional transit authority to provide service in James City County, York County, and the City of Williamsburg.

These services are geared towards residents, William & Mary students, and tourists. According to the Census Bureau[7], approximately 1.0% of residents (age 16 and older) in the Historic Triangle (0.8% in James City County, 6.2% in Williamsburg, 0.3% in York County) use public transportation to commute to work.

Service Overview

A Transit Development Plan (TDP) is a short-range plan that transit agencies are required to prepare and adopt at least every six years. The TDP identifies the services the transit system intends to provide and estimates the funding and other resources needed. WATA's most recent TDP was adopted in June 2016 and covers the period through FY 2022. Interim updates of the TDP are also done annually by WATA. WATA's current TDP can be accessed on WATA's website at https://www.gowata.org/193/Planning-Development.

Arising out of the 2016 update of the Transit Development Plan, WATA implemented a number of significant service changes starting in October 2016. The changes were primarily focused on improving on-time performance and making it easier and safer for bus operators to remain on schedule. These changes should also make the routes more attractive to riders. One change that focused on improving efficiency and effectiveness was to change service frequency to a split-shift for the peak morning and afternoon commuting hours.

There are twelve routes that comprise WATA's year-round fixed route transit network. These routes are shown in **Figure 18** on page 47, and brief descriptions of each route are included on the following pages.

[7] *2013-2017 American Community Survey 5-Yaer Estimates*, US Census Bureau.

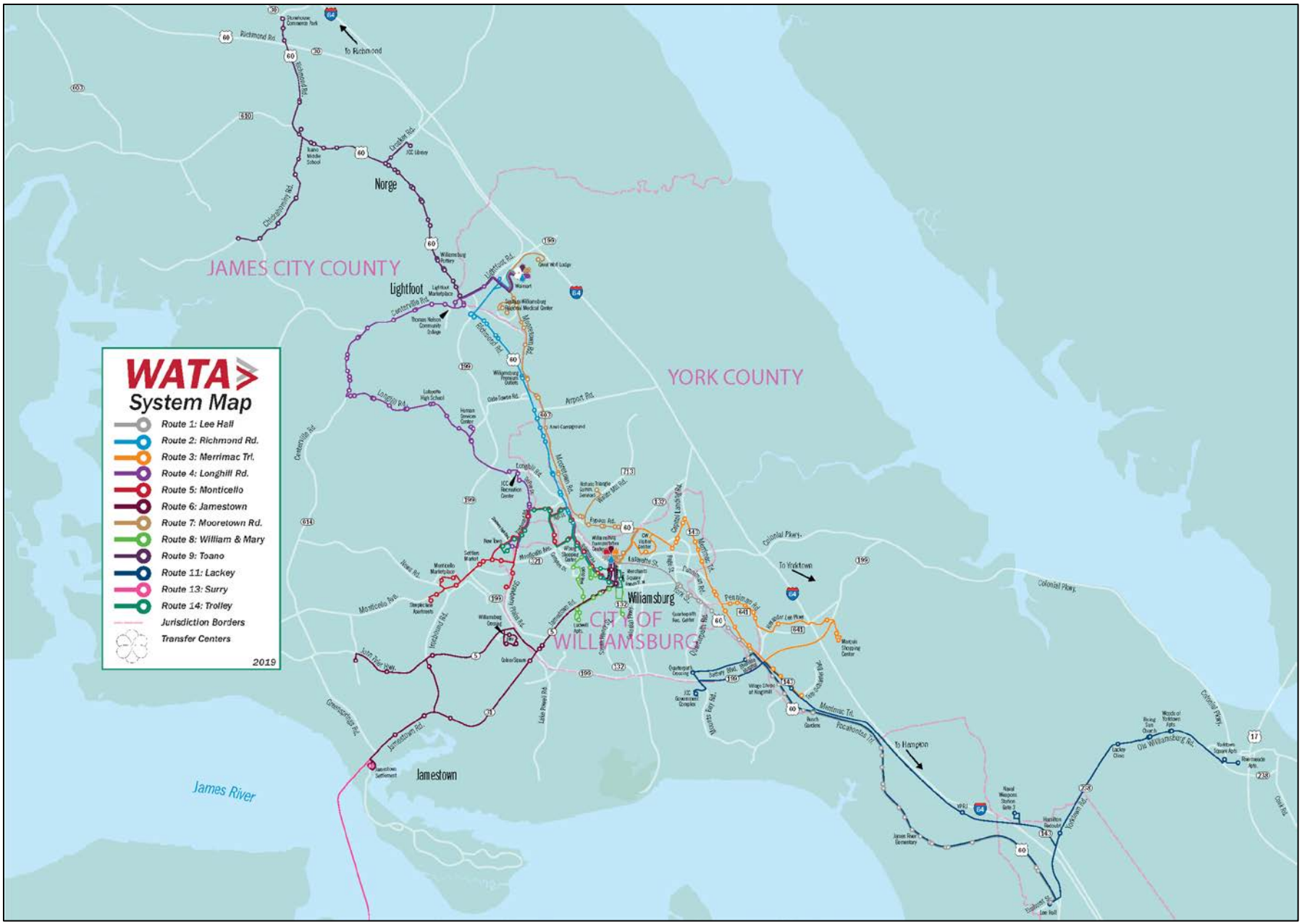


FIGURE 18 – WILLIAMSBURG AREA TRANSIT AUTHORITY ROUTE MAP

Source: WATA. The Surry County Connection route is not shown on this map.

Route 1 - Lee Hall (formerly Gray Line)

Route 1 provides services through one of the region's major industrial corridors (US Route 60/Pocahontas Trail), providing connections between the Williamsburg Transportation Center and Lee Hall. Major time points along the route include the WATA operations and maintenance facility, Quality Inn at Kingsmill, Busch Gardens, Walmart Distribution Center, and Lee Hall. This route connects with Routes 2, 3, 5, 6, and 7 at the Williamsburg Transportation Center. The Lee Hall stop is also served by Hampton Roads Transit, and WATA's Route 11 towards Lackey. Thirty-minute frequencies are provided Monday through Friday from 6:30 am to 9:30 am and from 4:30 pm to 6:30 pm, with hourly frequencies provided for the remainder of the service periods. The route runs until 11:00 pm on Mondays through Saturdays and until 6:00 pm on Sundays.

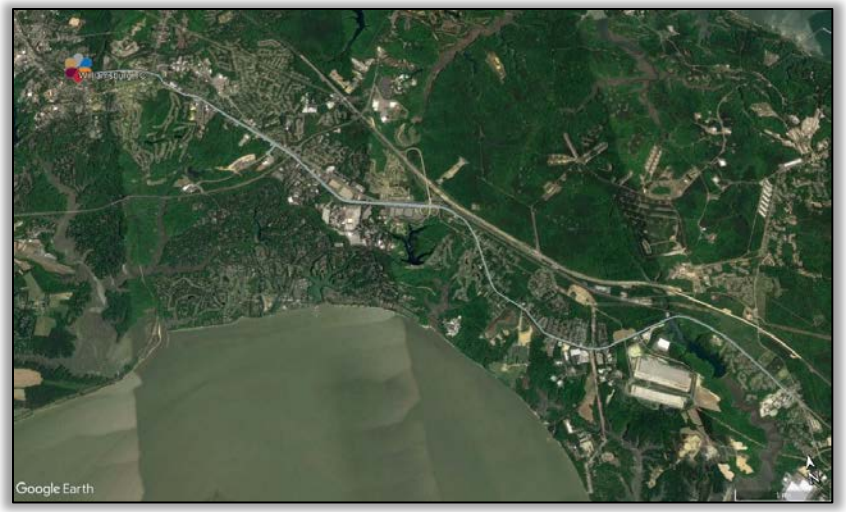


FIGURE 19 – ROUTE 1 (LEE HALL)
Source: WATA.

Route 2 - Richmond Road (formerly Blue Line)

Route 2 provides service through the western portion of one of the region's major commercial corridors (US Route 60/Richmond Road), providing connections between the Williamsburg Transportation Center and Walmart on East Rochambeau Drive. Major time points include the Williamsburg Transportation Center, Williamsburg Premium Outlets, Patriot Plaza, and Skipwith Farms. This route connects with Routes 1, 3, 5, 6, and 7 at the Williamsburg Transportation Center, and with Routes 4, 7, and 9 at Walmart. Riders may also connect to the Trolley or Route 8 at several stops. Thirty-minute frequencies are provided Monday through Friday from 6:30 am to 9:30 am and from 4:30 pm to 6:30 pm, with hourly frequencies provided for the remainder of the service periods. The route runs until 11:00 pm on Mondays through Saturdays and until 6:00 pm on Sundays.

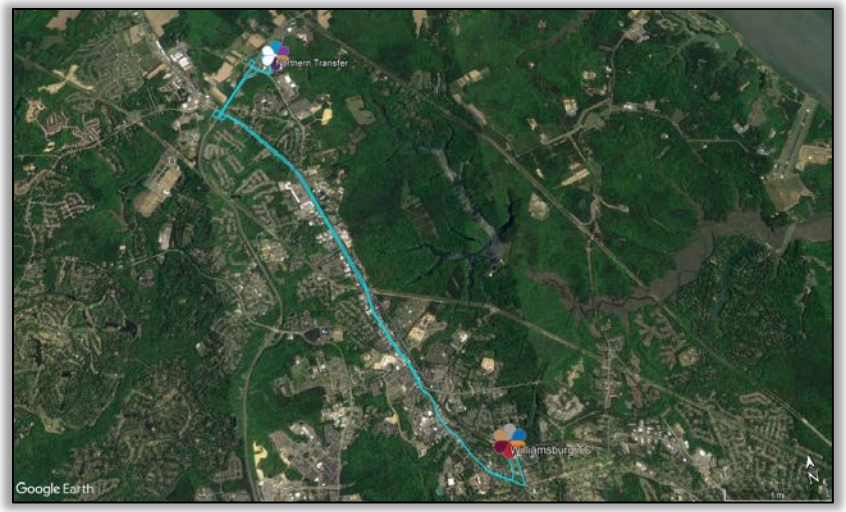


FIGURE 20 – ROUTE 2 (RICHMOND ROAD)
Source: WATA.

Route 3 - Merrimac Trail (formerly Orange)

Route 3 travels east from the Williamsburg Transportation Center to serve the Colonial Williamsburg Visitor Center, and then travels south along Merrimac Trail, serving Capitol Landing Road Penniman Road, Tam-O-Shanter, and the Marquis Shopping Center. The northbound trips include stops at People's Place and James-York Plaza. This route connects with Routes 1, 2, 5, 6, and 7 at the Williamsburg Transportation Center. Thirty-minute frequencies are provided Monday through Friday from 6:30 am to 9:30 am and from 4:30 pm to 6:30 pm, with hourly frequencies provided for the remainder of the service periods. The route runs until 9:00 pm on Mondays through Saturdays and until 6:00 pm on Sundays.

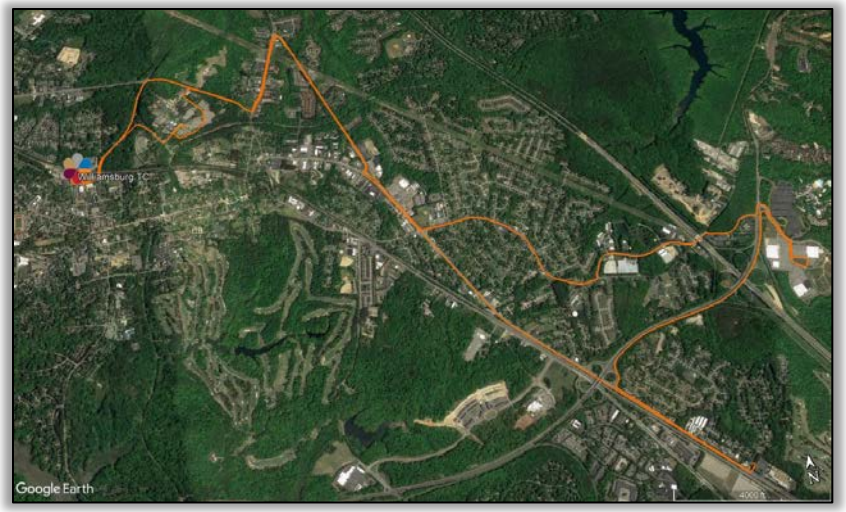


FIGURE 21 – ROUTE 3 (MERRIMAC TRAIL)
Source: WATA.

Route 4 - Longhill Road (formerly Purple 1)

Route 4 provides service from New Town north into James City County. Route 4 includes stops at the James City County Community Center, Human Services Center, Lafayette High School, Forest Glen, Walmart on East Rochambeau Drive, Thomas Nelson Community College, and Warhill High School. Riders can transfer to Routes 2, 7, and 9 at Walmart. Service along Route 4 is provided on hourly headways.

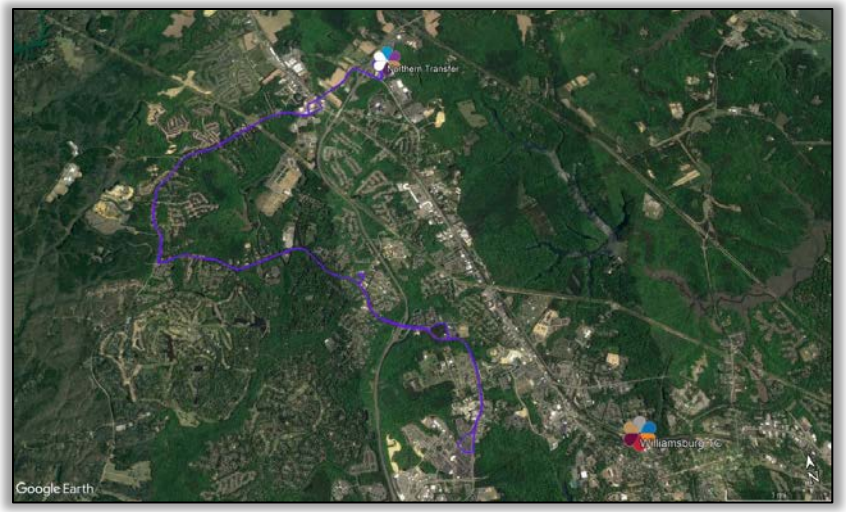


FIGURE 22 – ROUTE 4 (LONGHILL ROAD)
Source: WATA.

Route 5 - Monticello Avenue (formerly Red)

Route 5 travels westbound from the Williamsburg Transportation Center to the Monticello Shopping Center, New Town, Monticello Marketplace, Steeplechase Apartments, Midlands Apartments, Williamsburg Crossing, and College of William & Mary. This route connects with Routes 1, 2, 3, 6, and 7 at the Williamsburg Transportation Center. Thirty-minute frequencies are provided Monday through Friday from 6:30 am to 9:30 am and from 4:30 pm to 6:30 pm, with hourly frequencies provided for the remainder of the service periods. The route runs until 9:00 pm on Mondays through Saturdays and until 6:00 pm on Sundays.

FIGURE 23 – ROUTE 5 (MONTICELLO AVENUE)
Source: WATA.

Route 6 - Jamestown

Route 6 began operations in 2015 as a three-year demonstration route. Service is provided until 9:00 pm on Mondays through Fridays and until 6:00 pm on Sundays. This route provides extended service in the Jamestown area, traveling from Williamsburg Crossing Shopping Center to Jamestown via John Tyler Highway, Route 199, and Jamestown Road. The northbound trip travels along Greensprings Road, and then travels east along John Tyler Highway back to Williamsburg Crossing Shopping Center. Connections to Routes 1, 2, 3, 5, and 7 are available at the Williamsburg Transportation Center. The Jamestown Line connects with the Surry Line at the Jamestown Settlement.

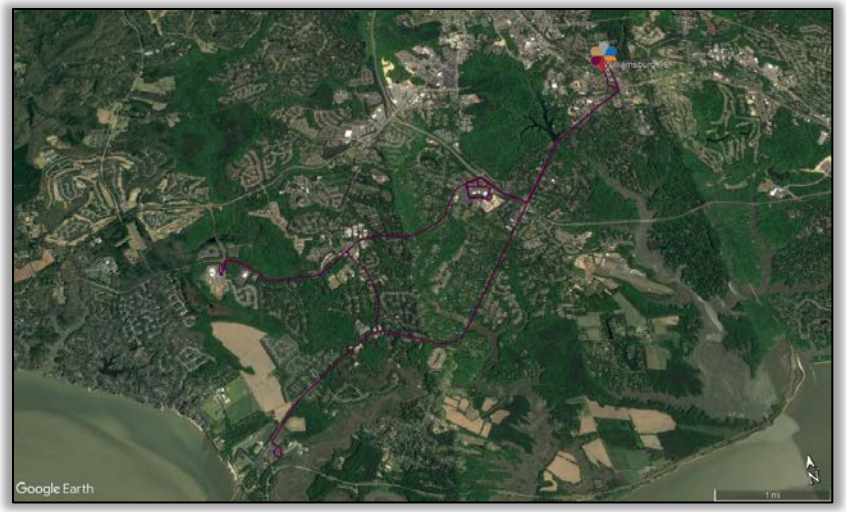


FIGURE 24 – ROUTE 6 (JAMESTOWN)
Source: WATA.

Route 7 - Mooretown Road (formerly Tan)

Route 7 connects destinations north of Williamsburg to the Williamsburg Transportation Center, serving Kingsgate Shopping Center, Williamsburg Market Center, Great Wolf Lodge, Walmart on East Rochambeau Drive, Sentara Regional Medical Center, Anvil Campground, and Pirates Cove. This route connects with Routes 1, 2, 3, 5, and 6 at the Williamsburg Transportation Center. Riders can connect to Routes 2, 4, or 9 at Walmart. Hourly frequencies are provided throughout the service periods.

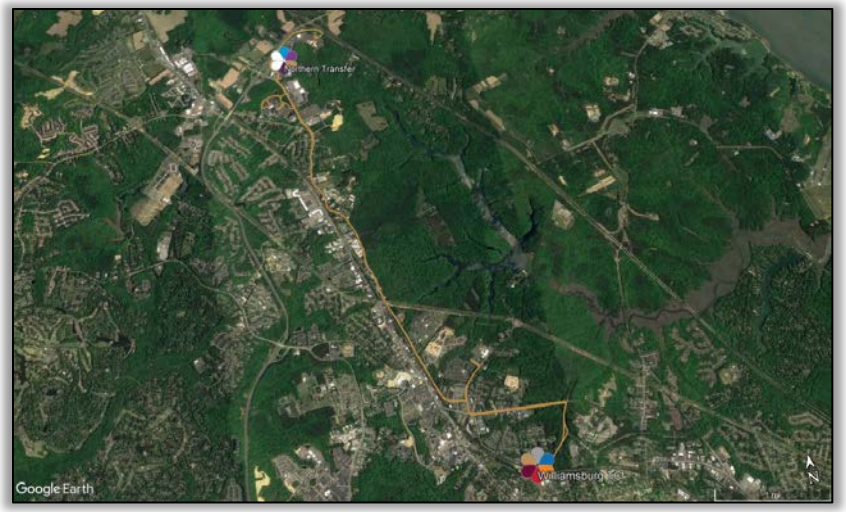


FIGURE 25 – ROUTE 7 (MOORETOWN ROAD)
Source: WATA.

Route 9 - Toano (formerly Purple 2)

Route 9 extends west into James City County along Route 60, providing service between Stonehouse Commerce Park in Toano, Chickahominy Road and Lightfoot. This route connects with Routes 2, 4, and 7 at Walmart on East Rochambeau Drive. The return trip to Toano includes stops at Williamsburg Pottery, Norge Crossing, and the Williamsburg Regional Library. Service along Route 9 is provided on hourly headways.

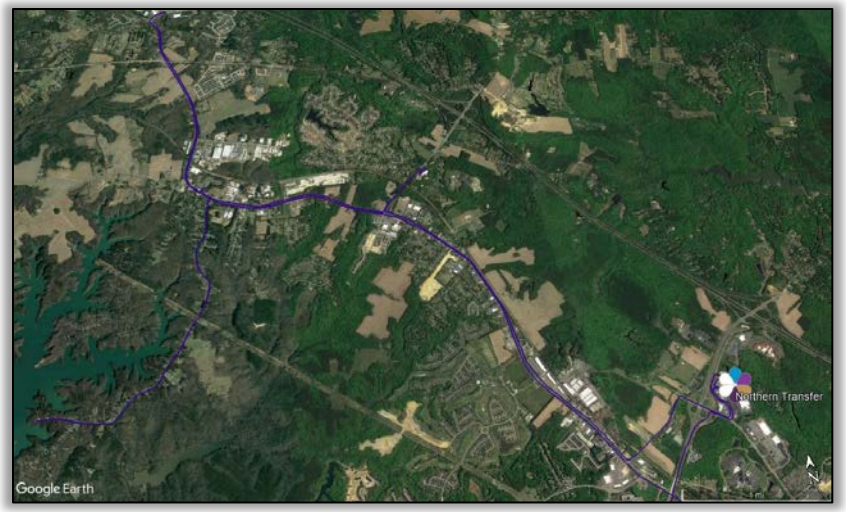


FIGURE 26 – ROUTE 9 (TOANO)
Source: WATA.

Route 11 - Lackey/Mounts Bay

Route 11 began operations in 2017 as a demonstration route to bring service to the Lackey area of York County and the Mounts Bay area of James City County. Service operates until 7:30 pm Monday through Saturday on 1.5-hour headways. The route connects the Riverside Hospital on Battery Boulevard to Lee Hall, Lackey Clinic, Virginia Peninsula Regional Jail, and the Yorktown Naval Weapons Station. Route 11 connects to the rest of the fixed route network through connections with Route 1 at Lee Hall and Battery Boulevard, in addition to a connection with Route 3 at Tam-O-Shanter.

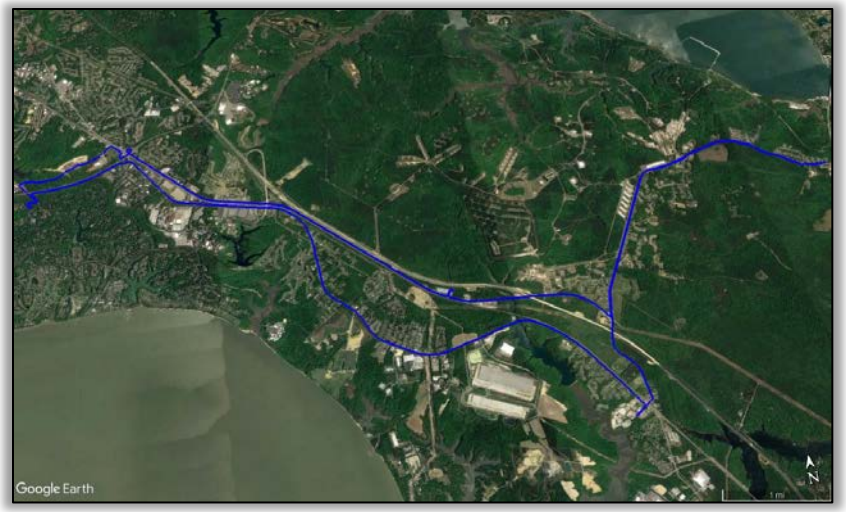


FIGURE 27 – ROUTE 11 (LACKEY/MOUNTS BAY)
Source: WATA.

Route 8 - William & Mary (formerly Green)

Route 8 is considered a specialty route that is intended to supplement the transportation needs of the College of William & Mary community, providing service along the perimeter of the campus to academic, housing, recreational, and shopping destinations. Stops along the route include Ludwell Apartments, Morton Hall, Campus Center, William & Mary Law School, Merchants Square, Sadler Center, Williamsburg and Monticello Shopping Centers, William & Mary Hall, Commons Dining Hall, and the parking deck adjacent to Police and Parking Services. Service is provided Monday through Friday from 7:00 am to 10:00 pm, and Saturday and Sunday from 10:00 am to 10:00 pm during William & Mary's fall and spring semesters.

FIGURE 28 – ROUTE 8 (WILLIAM & MARY)
Source: WATA.

Route 13 - Surry

Route 13 operates as a deviated fixed route between Surry County and the Jamestown Settlement via the Jamestown-Scotland Ferry. Six trips are made daily, connecting Surry Village, Lebanon Village, Smith's Park and the VDOT Park and Ride Lot to Route 6. The Surry Line will deviate up to ¾-mile from the prescribed route to provide service for people with disabilities who are unable to reach the fixed route stop.

FIGURE 29 – ROUTE 13 (SURRY)
Source: WATA.

Route 14 - Williamsburg Trolley

The Williamsburg Trolley provides a 30–minute loop that connects New Town, the College of William & Mary, Merchants Square, Williamsburg Shopping Center, and the High Street development. The Trolley operates Monday through Thursday from 9:00 am to 9:00 pm, Friday and Saturday from 9:00 am to 9:00 pm, and Sunday from 9:00 am to 6:00 pm. Connections with other WATA routes are possible at New Town, High Street, at stops along Richmond Road, and at the College of William & Mary.

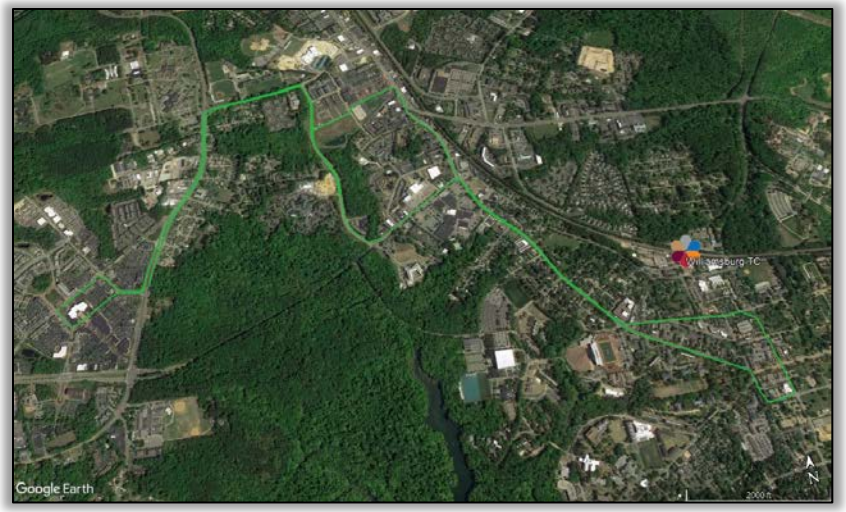


FIGURE 30 – ROUTE 14 (WILLIAMSBURG TROLLEY)
Source: WATA.

Additional Service

In addition to the routes described previously that serve local trips in the Williamsburg area, WATA also provides connections to the Hampton Roads Transit (HRT) system at two locations. HRT Route 121 runs an express route from the Newport News Transportation Center and Patrick Henry Mall to the Williamsburg Transportation Center. HRT Route 116 connects to WATA's Route 1 (Gray Line) at Lee Hall and terminates at Patrick Henry Mall. Transfers can be made from the Newport News Transportation Center and Patrick Henry Mall to the rest of the HRT's system.

Intercity bus service is also provided in the study area, with Greyhound service available at the Williamsburg Transportation Center. Greyhound provides two buses that travel from Williamsburg toward Richmond and Norfolk each day. Amtrak also serves the Williamsburg Transportation Center with two daily trains in each direction.

WATA also provides door-to-door paratransit service for people who are unable to use fixed-route buses due to a disability. As required by the Americans with Disabilities Act, ADA paratransit service is provided within ¾-mile of fixed routes and is required to be provided during the same days and hours.

In Fiscal Year 2020, WATA is anticipating the start of the One-Call system for providers of paratransit services in the area. Other partners in the system include the Peninsula Area Agency on Aging, Williamsburg Faith in Action, and the Williamsburg Health Foundation. The One-Call system is intended to make the provision of paratransit services more efficient and effective for users by combining the efforts of the partner agencies.

Ridership

In 2018, 2,125,856 trips were served on WATA's system (**Figure 31**). The total number of trips on the WATA system has been decreasing since 2007. This is not atypical of systems across the country, as over 70% of public transportation systems experienced a decrease in bus ridership between 2010 and 2018 according to American Public Transportation Association (APTA) data.

Based on a passenger survey conducted in 2015 for WATA's Transit Development Plan update, 50% of trips on WATA's system are for travel to or from work. The trip purposes with the next highest percentages are errands/personal (15%), shopping (14%), school (13%), and social/recreation (13%).

Figure 32 on page 55 shows the ridership for each route over the last three fiscal years. The route with the highest ridership in FY 2018

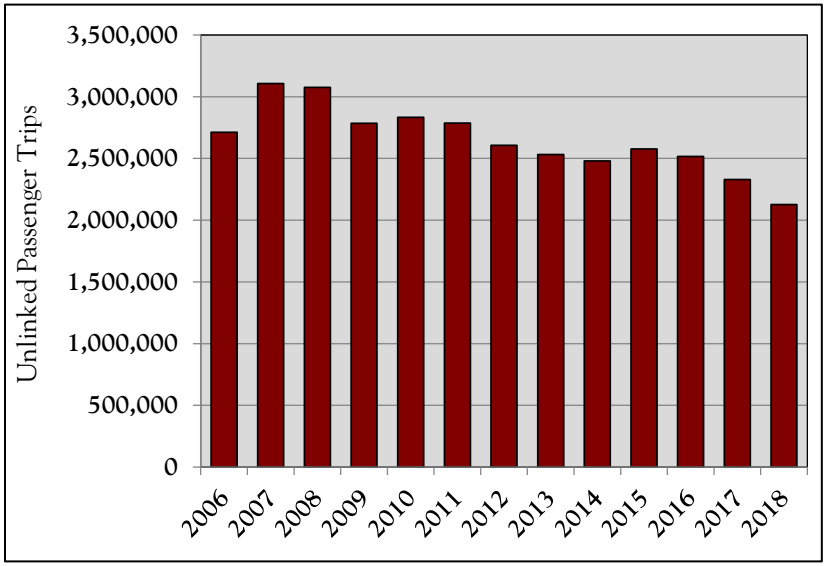


FIGURE 31 – WATA RIDERSHIP, 2006-2018

Data Sources: WATA, American Public Transportation Association.
An unlinked trip is a passenger trip made on one transit vehicle. If a passenger boards two buses to get from origin to destination, that is considered to be two unlinked trips.

was Route 2 (Richmond Road) with 209,000 riders, followed by Route 1 (Lee Hall) with 151,000 riders and Route 3 (Merrimac Trail) with 120,000 riders. Ridership decreased on most routes between Fiscal Year 2016 and 2018 except for the new Jamestown Route (Route 6) and the Williamsburg Trolley (Route 14).

Capital Investments

WATA's ongoing capital program includes a fleet of vehicles, passenger amenities, facilities, equipment, and technology. It is important that WATA engage in effective planning for capital in order to provide safe and sustainable operations.

WATA currently leases space for administrative and operations staff in the regional bus operations and maintenance facility owned by the Colonial Williamsburg Foundation (CWF) on Pocahontas Trail. Vehicles are also parked at this location, with maintenance performed on-site by First Transit.

WATA's main transfer hub is the Williamsburg Transportation Center. The Williamsburg Transportation Center is a multi-modal center, served not only by WATA but also by Amtrak, Greyhound, HRT, and taxi operators. Although owned by the City of Williamsburg, WATA leases space at the center to operate the WATA Customer Service Center and Store.

The WATA fleet consists of about 35 vehicles. A large majority of these are heavy-duty transit buses that are greater than 30 feet in length, followed by light-duty buses that are less than 30 feet, and support vehicles. A typical heavy-duty transit bus is planned to be in service for 12 years or 500,000 miles, but due to WATA's large service area buses are often in need of replacement at around 10 years. Light-duty buses are normally planned to be in service for 7 years. As of 2019, nearly all of WATA's vehicles used to provide service are well within their useful life.

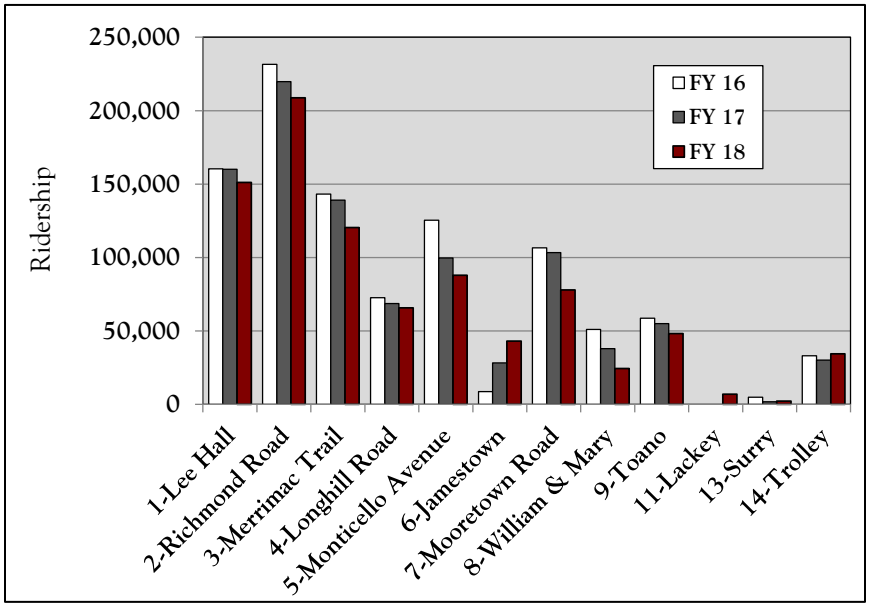


FIGURE 32 – WATA RIDERSHIP BY ROUTE, 2016-2018
Data Source: WATA.

WATA also owns a fleet of 14 buses that are leased for use by The Colonial Williamsburg Foundation to provide transportation around the Historic Area. Although these buses have reached their useful life in terms of years, their current mileages are relatively low.

WATA also invests in facilities that are intended to provide a hospitable environment for riders and WATA employees. Currently, WATA has about 50 passenger waiting shelters located throughout the service area. Investments in passenger amenities to make WATA service safer and more attractive to riders also include benches, lights, and bike racks.

WATA is undertaking two significant facility projects. One is a transfer center in the northern section of the service area, which will provide a necessary point for passengers to change routes and an opportunity for operators to take needed breaks. WATA has also

been working for several years on developing a new administrative/maintenance facility. A new facility will address operational needs such as improved dispatch and operator assembly areas and will enhance the environment for training, maintenance, and administration.

WATA continues to invest in technology to improve the efficiency and safety of their system. Since WATA receives funding from the Federal Transit Administration, it is required to comply with National ITS Architecture standards that guides the development of ITS projects. WATA is part of the regional ITS architecture framework maintained by the HRTPO.

WATA implemented an Automatic Vehicle Locator (AVL) system in 2012 that allows tracking of transit vehicles by both WATA staff and customers. This technology also allows customers to use a text-based feature to find out when the bus will arrive at a stop. WATA is planning for its next iteration of this technology to take advantage of advances in software, equipment, and functionality.

WATA implemented an Automatic Passenger Counter (APC) system in early 2019 that will help collect accurate ridership data. This will assist WATA with planning and designing future service. In addition, WATA is currently in the process of procuring transit service planning software that will greatly enhance the ability to plan service changes more quickly. The software uses data to provide real-time results of a service scenario in terms of possible ridership, time, and costs. This will not only allow staff to see these impacts, but also policymakers and the public.

Finally, WATA is investing in software and equipment that will allow for additional payment options. Implementing additional electronic payment options such as mobile application or phone-based payments will make using WATA services more convenient.


Williamsburg Transportation Center HRTPO

Funding

In Fiscal Year 2020, WATA's operating expenses are projected to be $6.8 million. Of this amount, approximately 57% is devoted to personnel expenses and 26% is spent on fleet maintenance and fuel. Remaining expenses such as capital needs vary annually depending on whether major capital items are necessary.

Funding sources supporting this budget come from federal, state, and local governments, along with farebox revenues and contract operations. Funding from the federal and state government account for nearly two-thirds of the total revenues for operations, and this amount has remained relatively consistent for WATA in recent years. Capital funds have traditionally been supported by the Federal Transit Administration (FTA) at 80%, with the state and local governments providing the matching funds.

At the federal level, WATA funding is included in the current Fixing America's Surface Transportation (FAST) Act legislation. The FAST Act includes the following programs available to WATA: Metropolitan Planning, Urbanized Area Formula, State of Good Repair (SGR), New Starts, Rural Area Formula, Bus and Bus Facilities, and Enhanced Mobility of Seniors and Individuals with

Disabilities. In Virginia, the Department of Rail and Public Transportation (DRPT) serves as the designated recipient of funds provided under the FAST Act for Hampton Roads.

WATA is also able to receive funding that originated as surface transportation funds but can be transferred, or "flexed", to the public transportation program. Generally, the funds will be flexed to the FTA through DRPT and can be reimbursed directly to the approved recipient agencies. These programs include the Surface Transportation Program (STP), Regional Surface Transportation Program (RSTP), and the Congestion Mitigation and Air Quality (CMAQ) program.

The Virginia Department of Rail and Public Transportation provides grants to support transit capital and operating services and Transportation Demand Management (TDM) programs, projects and services. Capital funding supports transit assets such as vehicles, transit facilities and infrastructure, machinery, and heavy equipment. Operating funding supports transit operations, maintenance, repairs and administrative costs, and TDM/commuter assistance program and project operations. Planning funding supports research and studies of public transportation and TDM services, programs, projects, and improvements.

State funding for public transportation is comprised of revenues from the Mass Transit Trust Fund (MTTF) and the Mass Transit Capital Fund (MTCF). Funding for these funds is collected from the motor vehicle fuel tax, general sales and use tax, and state recordation tax.

After distributing funds for project development and administration, safety oversight, and paratransit capital projects, the MTTF funds are allocated with a minimum of 31% for operating assistance grants, 12.5% for capital assistance grants, 53.5% for Washington Metropolitan Area Transit Authority assistance, and up to 3% for special projects grants.

In FY 2020, DRPT has implemented a new system called MERIT (Making Efficient + Responsible Investments in Transit) to guide its allocation of transit funds. The new system increases focus on the operational performance measures (operating cost, ridership, revenue miles/hours) used to allocate funding for operations. System sizing of bus transit operators is based on factors including operating cost, ridership, revenue vehicle hours, and revenue vehicle miles. System performance is based equally on passengers per revenue vehicle hour, passengers per revenue vehicle-mile, operating cost per revenue vehicle hour, operating cost per revenue vehicle-mile, and operating cost per passenger.

MERIT
Making Efficient + Responsible Investments In Transit

In order to ensure an even distribution of funding, the share of state operating assistance will be capped at 30% of an agency's operating cost. Unallocated balances remaining after applying the cap will run through the performance-based formula to ensure full allocation of the available operating funding.

DRPT also established a prioritization process for transit capital projects. For prioritization, transit capital projects will be classified as State of Good Repair (capital projects or programs to replace or rehabilitate an existing asset), Minor Enhancement (capital projects or programs with a total cost of less than $2 million, or an increase of less than 5 vehicles or 5% of the fleet, whichever is greater), and Major Expansion (capital projects or programs with a cost exceeding $2 million, or an increase of greater than 5 vehicles or 5% of fleet size, whichever is greater). A minimum of 80% of the funds annually must be allocated to State of Good Repair and Minor Enhancement projects and a maximum of 20% will be available for Major Expansion projects.

State of Good Repair and Minor Enhancement projects will be matched at a maximum state match rate of 68% of the total project cost. Major Expansion projects will be funded at a maximum state match rate of 50% of the total project cost. Local matching funds at a minimum of 4% of the total project cost will be required for all transit capital projects.

State of Good Repair projects will be evaluated according to asset condition (60 points) and service impact (40 points). Minor enhancement projects will be evaluated considering only the service impact criteria, which are based on the age and mileage of the vehicle compared to the expected service life.

Major Expansion projects will be evaluated based on congestion mitigation, economic development, accessibility, safety, environmental quality, and land use. In the Hampton Roads region, these factors have a weighting framework of congestion mitigation (45%), economic development (5%), accessibility (15%), safety (5%), environmental quality (10%), and land use (20%). The weight of these factors varies throughout different parts of the state.

Major Expansion projects will be scored based on these factors, the cost of the project, and other information in the project application. The final score for a project will be determined by calculating the anticipated benefits relative to the amount of funding requested.

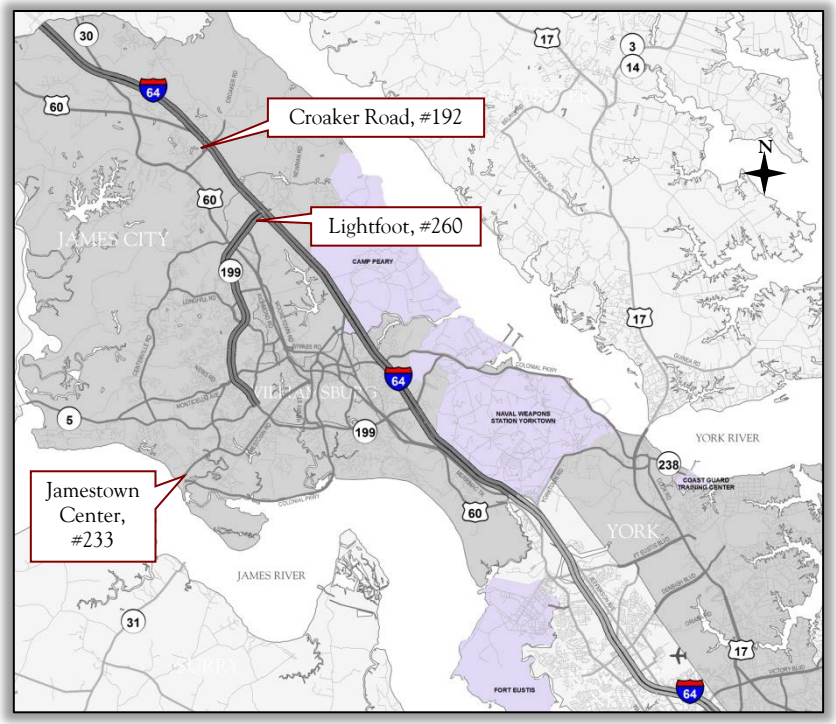
More information on DRPT's MERIT program is provided at http://www.drpt.virginia.gov/transit/merit-statewide-public-transportation-capital-grants-and-operating-assistance.

Park and Ride Lots

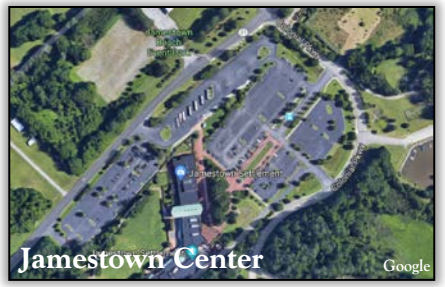
A number of residents (age 16 and older) that live in the Historic Triangle use carpooling to travel to work. According to the Census Bureau, 5,234 residents in the study area carpooled to work on a regular basis in 2013-2017. This percentage (7.3%) is slightly below the regional carpooling average of 7.9%. The percentages of residents that carpool within each jurisdiction were: 8.4% in James City County, 8.4% in Williamsburg, and 6.0% in York County. The TRAFFIX program, which is funded by HRTPO and operated by Hampton Roads Transit, conducts various efforts to increase the use of transportation alternatives such as carpools, rideshares, and public transit throughout the region and in the Historic Triangle.

In order to assist with carpooling and ridesharing efforts, VDOT maintains Park and Ride lots throughout the state, including three lots in the Historic Triangle (**Map 14**). These Park and Ride include:

- **Lightfoot, #260** - This lot is located on East Rochambeau Drive just to the south of the interchange of I-64 and Route 199 north of Williamsburg. It has lights, bicycle racks, and transit service. The gravel lot has space available for 51 vehicles. According to VDOT Hampton Roads District data[8], the 2018 average utilization rate was 33% (17 out of 51 spaces).



Map 14 – Park and Ride Lots in the Historic Triangle
Data Sources: VDOT, TRAFFIX.



[8] *HRTPO analysis of VDOT Hampton Roads District Park and Ride Occupancy, December 2018.*

- **Croaker Road, #192** - The Croaker Road Lot is located at the corner of Rochambeau Drive and Croaker Road just to the west of I-64. It has lights and bicycle racks. This partially-paved lot has space for vehicles. According to VDOT Hampton Roads District data, the 2018 average utilization rate was 73% (47 out of 64 spaces).
- **Jamestown Center, #233** - This lot is located on Route 359 at Route 31, just to the north of the Jamestown-Scotland Ferry. It has lights, bicycle racks, and transit service. This paved lot has 516 spaces, which includes 12 handicap spaces. According to VDOT Hampton Roads District data, the 2018 average utilization rate was 21% (110 out of 516 spaces).

In 2013, VDOT completed a statewide Park and Ride Lot Inventory and Usage Study, including a full-scale audit of all Park and Ride lots in the state, an interactive webpage to help users find lots, and a list of recommendations for new, expanded or enhanced lots. This study determined that approximately 75% of Virginia's Park and Ride lot spaces were being used, with some lots not having enough spaces to accommodate all of the demand. In order to provide Park and Ride lots that were conveniently located and feasible for commuters, VDOT conducted a data-driven study to determine where investments in Park and Ride facilities were needed. The goal was to develop commuter Park and Ride investment strategies for specific locations within each VDOT construction district.

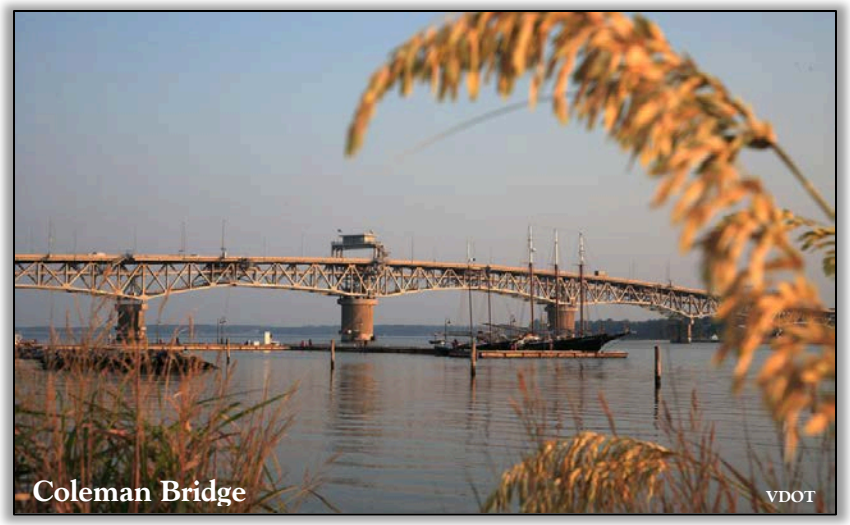
Within the Hampton Roads District, ten high priority Park and Ride investment projects were analyzed. One of the projects was to repave the existing Croaker Road lot (James City County) at a cost of $700,000. This lot received the lowest technical score/ranking (3.883) of the ten high priority projects analyzed in Hampton Roads based on commuter/roadway demand and the transportation network benefit. Even though this was the lowest rated Park and Ride investment project in Hampton Roads, it was included as one of the 84 recommended high priority investment projects in Virginia.

In December 2017, VDOT completed Park and Ride Design Guidelines to provide a user-friendly framework from which users can make informed decisions regarding Park and Ride lot layout, services, amenities, and green infrastructure in developing or retrofitting Park and Ride lots throughout the Commonwealth.

BRIDGES

There are 124 bridges[9] in the Historic Triangle. James City County is home to half of the bridges (62), while there are 12 bridges in Williamsburg and 50 bridges in York County. The most high-profile of these bridges – the George P. Coleman Memorial Bridge – connects York County and the Peninsula to Gloucester County on the Middle Peninsula.

Figure 33 shows the bridges in the Historic Triangle by year built. As of 2019, the median age of bridges in the Historic Triangle is 49.5 years. This is more than 8 years older than the regional median bridge age of 41 years. Looking at each locality, the median bridge age as of 2019 is 43.5 years in James City County, 59 years in Williamsburg, and 54 years in York County.



STRUCTURALLY DEFICIENT BRIDGES

A bridge is classified as structurally deficient if it has elements that need to be monitored and/or repaired. Structurally deficient bridges typically require maintenance and eventually need to be rehabilitated or replaced to address deficiencies.

In spite of these deficiencies, **structurally deficient bridges are not necessarily unsafe. Bridge inspectors will close or impose weight limits on bridges that they feel are unsafe**. In order to assure the safety of structurally deficient bridges, they are inspected more frequently (generally on an annual basis) and more thoroughly than other bridges.

Bridges are classified as structurally deficient if at least one of the following conditions is true:

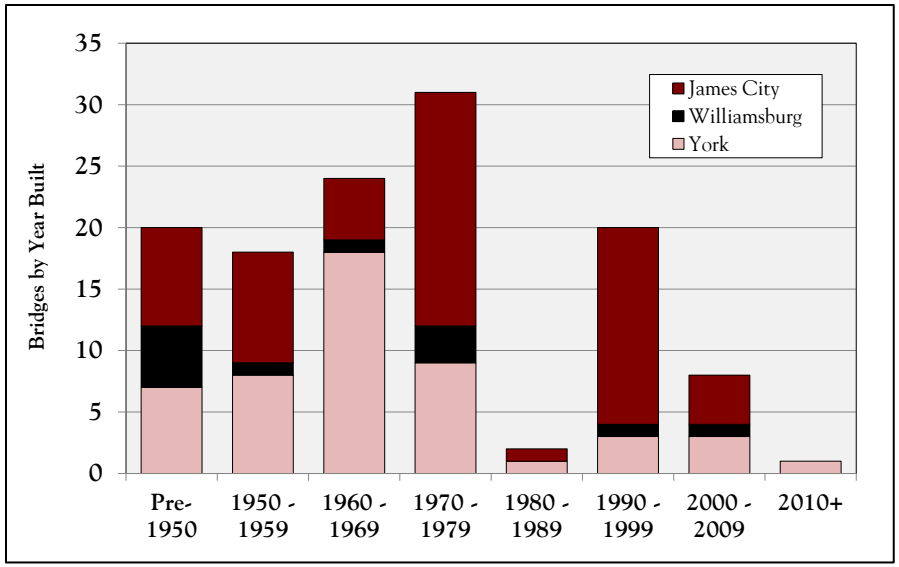


FIGURE 33 – HISTORIC TRIANGLE BRIDGES BY YEAR BUILT

Source: HRTPO analysis of VDOT data.

[9] The definition of a "bridge" used in this analysis is based on National Bridge Inspection Standards (NBIS). The bridge must be located on a roadway open to the general public, be > 20 feet in length, and must carry a roadway.

- Deck Condition Rating ≤ 4
- Superstructure Condition Rating ≤ 4
- Substructure Condition Rating ≤ 4
- Culvert Condition Rating ≤ 4
- The Structural Condition and Waterway Adequacy Ratings were previously included in determining whether bridges were classified as structurally deficient. However, as of 2018, these ratings are no longer used in this determination.

There is only one bridge in the Historic Triangle that is classified as structurally deficient as of January 2019. This bridge – Route 143 over Queen Creek – is classified as structurally deficient due to a Superstructure Condition Rating of 4 (**Map 15** on page 63).

Functionally Obsolete Bridges

A functionally obsolete bridge is a structure that was built to geometric standards that are no longer used today. Functionally obsolete bridges do not have adequate lane widths, shoulder widths, or vertical clearances to serve current traffic volumes or meet current geometric standards. Functionally obsolete bridges also may occasionally be flooded or have difficult approaches to navigate.

Bridges are classified as functionally obsolete if at least one of the following conditions is true:

- Structural Condition Rating ≤ 3
- Waterway Adequacy Rating ≤ 3
- Deck Geometry Rating ≤ 3
- Underclearances Rating ≤ 3
- Approach Roadway Alignment Rating ≤ 3

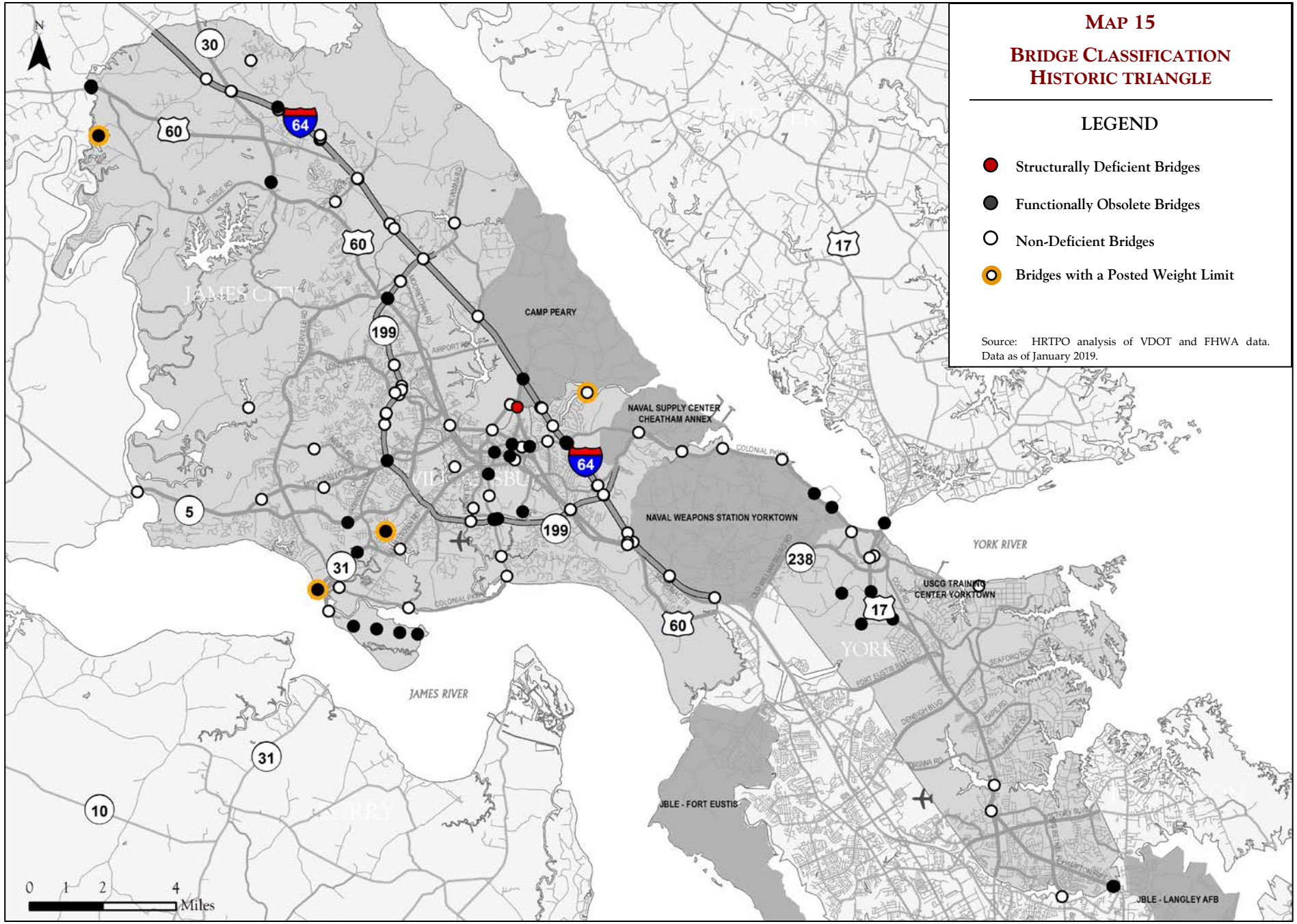
By rule, any structure that is classified as structurally deficient cannot also be classified as functionally obsolete. Structures that have ratings that would qualify the bridge to be classified as both structurally deficient and functionally obsolete are classified as structurally deficient.

As shown in **Figure 34**, there are 36 bridges in the Historic Triangle that are classified as functionally obsolete as of January 2019.

Locality	Federal Bridge #	Facility	Crossing	Year Built
WMB	22328	Capitol Landing Rd	CSX Railroad	1977
YC	4290009P	Colonial Pkwy	Naval Weapons Rd	1931
YC	4290008P	Colonial Pkwy	North Pier Access Rd	1962
JCC	24057	Glass House Ferry (SR 31)	James River	1994
YC	19855	Hampton Hwy (SR 134)	Brick Kiln Creek	1930
JCC	10533	Hickory Signpost Rd (Rte 629)	Mill Creek	1932
JCC	10516	Hicks Island Rd (Rte 601)	Diascund Creek	1932
YC	19836	I-64 WB	Lakeshead Dr (Rte 1314)	1965
JCC	10498	I-64 WB	Six Mount Zion Rd (Rte 600)	1975
JCC	10464	John Tyler Hwy (SR 5)	Powhatan Creek	1937
JCC	10476	Jamestown Rd (SR 31)	Powhatan Creek	1957
JCC	4290029P	Jamestown Island Tour Rd	Creek	1957
JCC	4290030P	Jamestown Island Tour Rd	Creek	1957
JCC	4290031P	Jamestown Island Tour Rd	Kingsmill Creek	1957
JCC	4290028P	Jamestown Island Tour Rd	Pitch And Tar Swamp	1957
WMB	4290019P	Lafayette St	Colonial Pkwy	1936
WMB	22338	Merrimac Trail (SR 143)	Colonial Pkwy	1948
WMB	4290020P	Newport Ave	Colonial Pkwy	1957
WMB	4290018P	Page St	Colonial Pkwy	1936
WMB	23768	Quarterpath Rd	Tutters Neck Pond	1993
YC	19857	Route 143	I-64 at Camp Peary	1965
JCC	10508	Route 199 WB	Colonial Pkwy	1976
JCC	25513	Route 199 SB	Monticello Ave	1999
JCC	24228	Route 199 SB	Route 60, 603 & CSX R/R	1995
JCC	10511	Route 199 EB	Tour Road	1976
JCC	10513	Route 199 WB	Tour Road	1976
JCC	10531	Stewart Rd (Rte 622)	Branch Diascund Creek	1937
JCC	10532	Stewart Rd (Rte 622)	Diascund Creek	1937
YC	19824	US Route 17 (Coleman Bridge)	York River & Rte 1208	1952
YC	19820	US Route 17 NB	Colonial Park Service Rd	1968
YC	19822	US Route 17 SB	Colonial Park Service Rd	1968
JCC	10486	US Route 60 EB	CSX Railroad @ Toano	1964
JCC	10487	US Route 60 WB	CSX Railroad @ Toano	1968
YC	4290002P	Yorktown Battlefield Tour Rd	Beaverdam Creek	1975
YC	4290003P	Yorktown Battlefield Tour Rd	Crawford Rd	1956
YC	4290004P	Yorktown Battlefield Tour Rd	US Route 17	1959

Figure 34 – Functionally Obsolete Bridges

Source: HRTPO analysis of VDOT data. As of January 2019.


MAP 15
BRIDGE CLASSIFICATION
HISTORIC TRIANGLE
LEGEND
Structurally Deficient Bridges
Functionally Obsolete Bridges
Non-Deficient Bridges
Bridges with a Posted Weight Limit
Source: HRTPO analysis of VDOT and FHWA data. Data as of January 2019.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
YORK RIVER
JAMES RIVER
JAMES CITY
YORK
30
60
64
17
199
5
31
238
10
0 1 2 4
Miles

Federal Bridge Performance Measures

Recent federal legislation requires states and Metropolitan Planning Organizations (MPOs) to prepare and use a set of federally-established performance measures and set targets in a number of areas, including the condition of bridges. As part of this legislation, each bridge must be classified as being in good, fair, or poor condition based on recent inspections. This is determined using the deck, superstructure, and substructure ratings. Each of these three components is rated from 0 to 9, with 9 representing a component in excellent condition and 0 representing a failed condition or a closed bridge. For culverts, a single rating is given to assess the general condition of the entire culvert.

The lowest of these three condition ratings (or the culvert condition rating) is the rating used to determine whether the bridge is in good, fair, or poor condition. If the lowest condition rating is ≥ 7, the bridge is considered to be in good condition. If the lowest condition rating is 5 or 6, the bridge is in fair condition. Those bridges with the lowest condition rating ≤ 4 are considered to be in poor condition.

Using the federal standards, 24 bridges (19%) in the Historic Triangle are in good condition, 99 bridges (80%) are in fair condition, and 1 bridge (1%) – the Route 143 Bridge over Queen Creek – is in poor condition as of January 2019. On a locality level, bridges are:

- James City County - 21% good, 79% fair
- Williamsburg - 58% good, 42% fair
- York County - 8% good, 90% fair, 2% poor

By comparison, 30% of bridges in Hampton Roads are in good condition, 65% are in fair condition, and 5% are in poor condition.

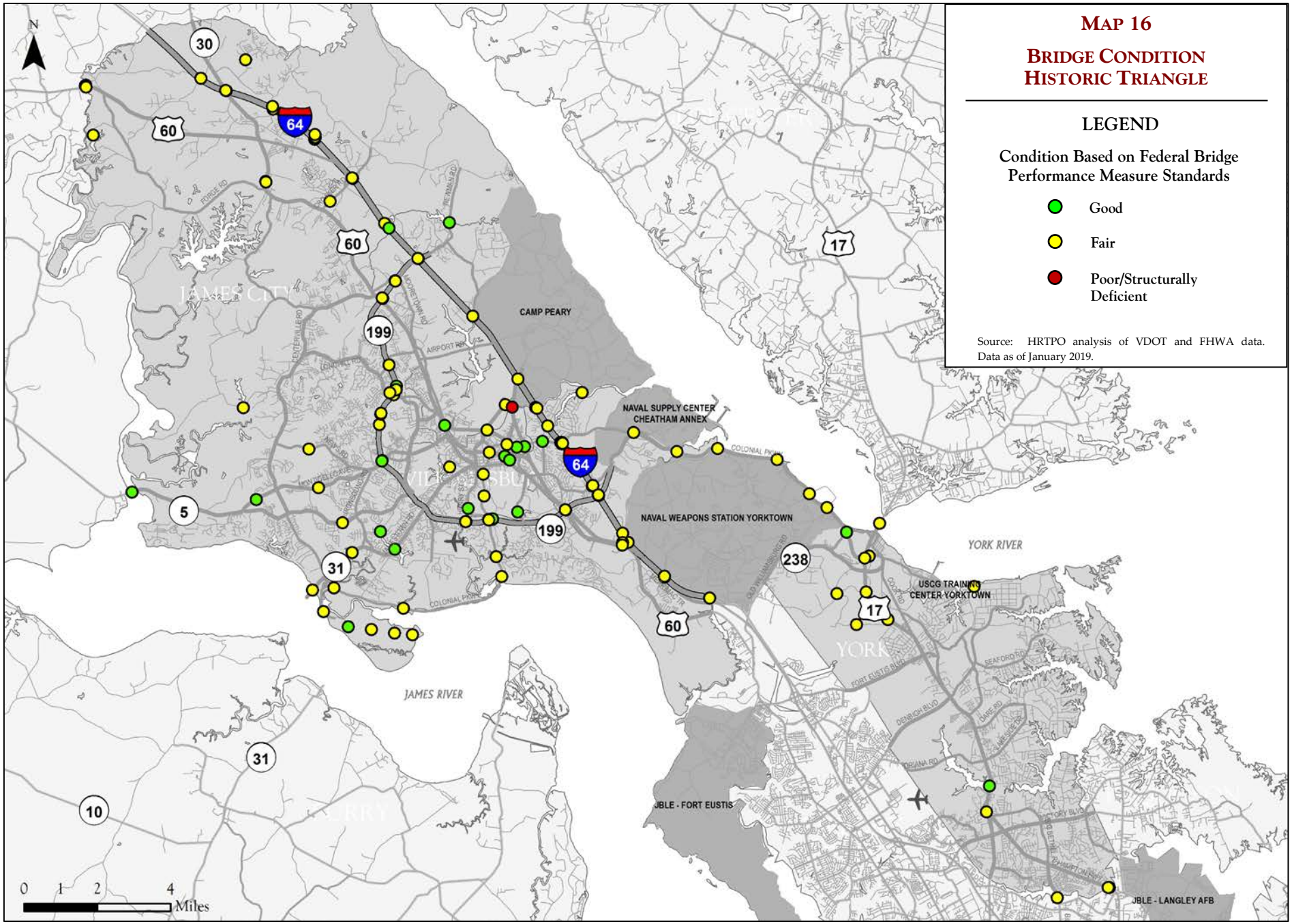
Map 16 on page 65 shows those bridges in good, fair, and poor condition in the Historic Triangle as of January 2019.

Recent Bridge Projects

There have been three bridges rehabilitated or replaced in the Historic Triangle since 2009 **(Figure 35)**. The largest of these bridge projects was a replacement of the Dresser Bridge, which carries Route 5 over the Chickahominy River. A new fixed-span bridge with 52' vertical clearance replaced the original swing span bridge that was constructed in 1939. The new Dresser Bridge – which was constructed at a cost of $33.6 million – opened to traffic on January 24, 2009.

Locality	Federal Bridge #	Facility	Type	Completion Date
YC	27508	George Washington Mem Hwy (US Route 17) over Poquoson River	Replacement	2015
JCC	28011	Route 5 over Chickahominy River	Replacement	2009
JCC	10511/10513	Route 199 over Tour Road	Rehabilitation	2014

Figure 35 – Bridges Rehabilitated or Replaced in the Historic Triangle, 2009-2018
Source: HRTPO analysis of VDOT data.

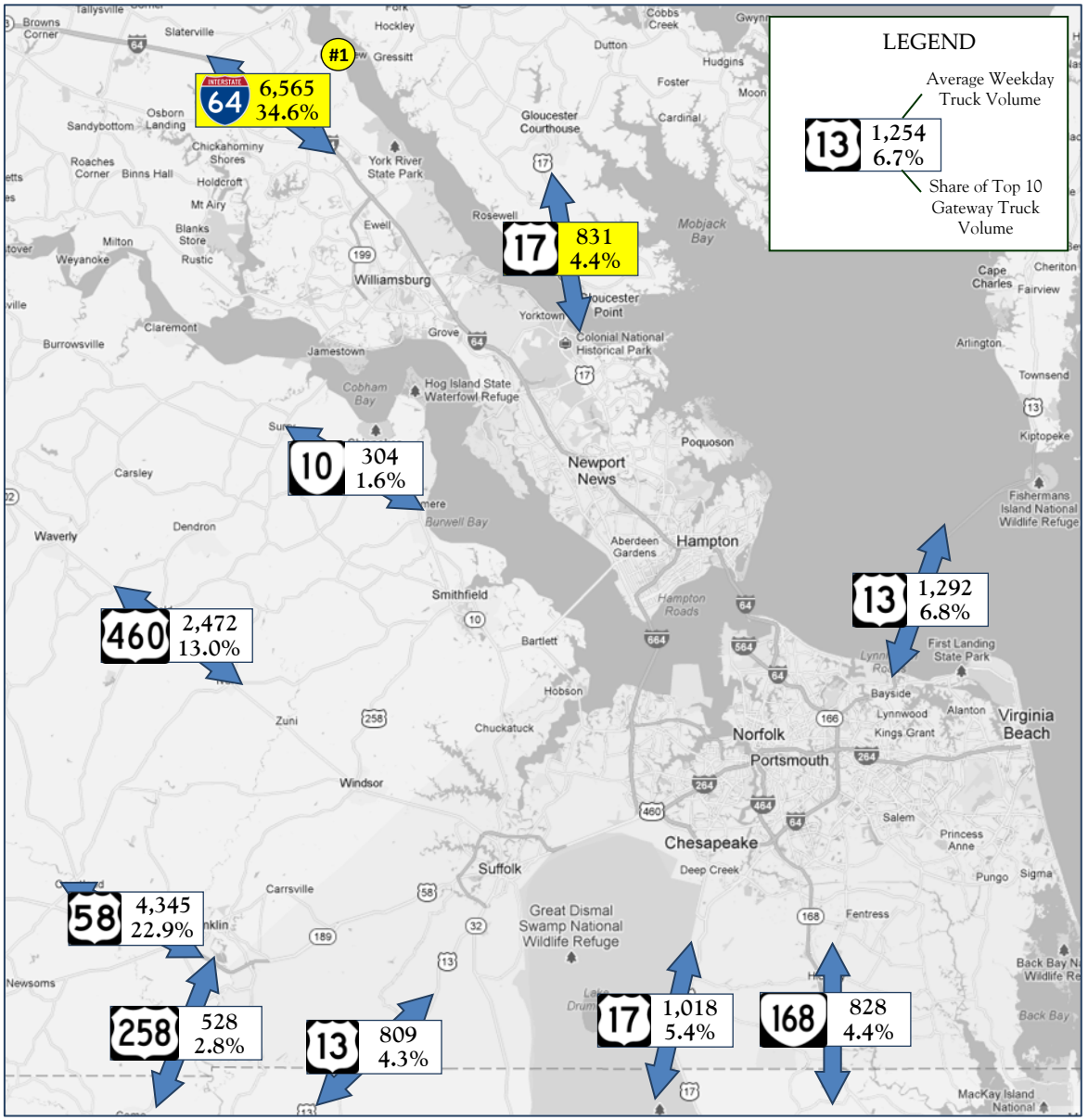

MAP 16
BRIDGE CONDITION
HISTORIC TRIANGLE
LEGEND
Condition Based on Federal Bridge Performance Measure Standards
Good
Fair
Poor/Structurally Deficient
Source: HRTPO analysis of VDOT and FHWA data. Data as of January 2019.
N
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
JAMES CITY
YORK
0 1 2 4 Miles

FREIGHT

Freight transportation influences every aspect of our daily lives and keeps our businesses and industries competitive in the local, state, and global economy. Hampton Roads is a multimodal region that includes ports, airports, rail, private trucking, shipping and warehouse distribution facilities, as well as a network of road and rail corridors for the delivery of freight, goods, and services. James City County, Williamsburg, and York County are a critical part of the freight community, serving as the northern gateway to the region and housing a number of distribution facilities and industrial sites. Since the predominant mover of freight is by trucks across highways for both Hampton Roads and the Historic Triangle, the focus of this section is on truck movement.

TRUCK MOVEMENTS THROUGH REGIONAL GATEWAYS

Within the HRTPO's Regional Freight Study[10], an analysis was completed that showed the Top 10 regional gateways for trucks each weekday. **Map 17** provides an updated version for the year 2018. I-64 through the Historic Triangle is the number one gateway for trucks in the region. A total of 6,565 trucks used the I-64 gateway (the VDOT count station is located in James City County) each weekday in 2018, up from 5,993 trucks in 2014. **Figure 36** on page 69 shows how the average weekday truck volume for the I-64 gateway has changed in recent years. The



MAP 17 – NUMBER AND SHARE OF TRUCKS PASSING THROUGH THE TOP 10 REGIONAL GATEWAYS EACH WEEKDAY, 2018

Source: HRTPO analysis of VDOT and CBBT data. Background map source: Google.

[10] *Hampton Roads Regional Freight Study: 2017 Update*, HRTPO, July 2017.

Coleman Bridge (Route 17) between Gloucester County and York County serves as a second major gateway for the Peninsula. **Figure 37** shows how the average weekday truck volumes have changed at the Coleman Bridge (Route 17) since 2005.

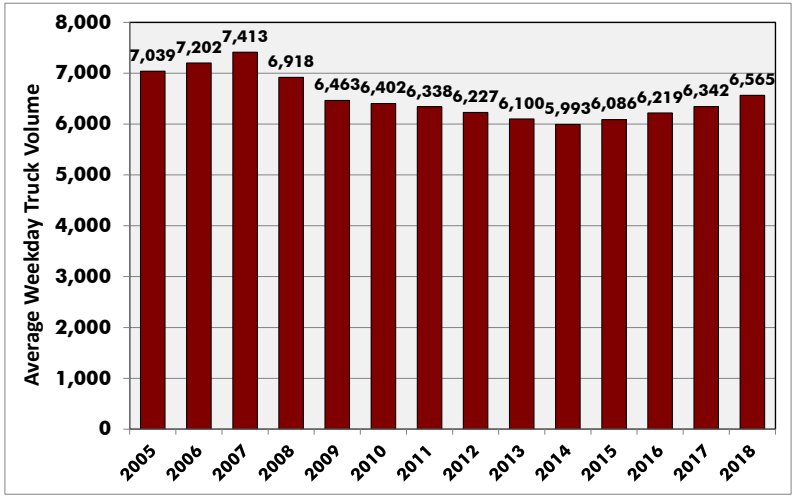


FIGURE 36 – I-64 GATEWAY (JAMES CITY COUNTY) AVERAGE WEEKDAY TRUCK VOLUMES, 2005 - 2018

Source: HRTPO analysis of VDOT data.

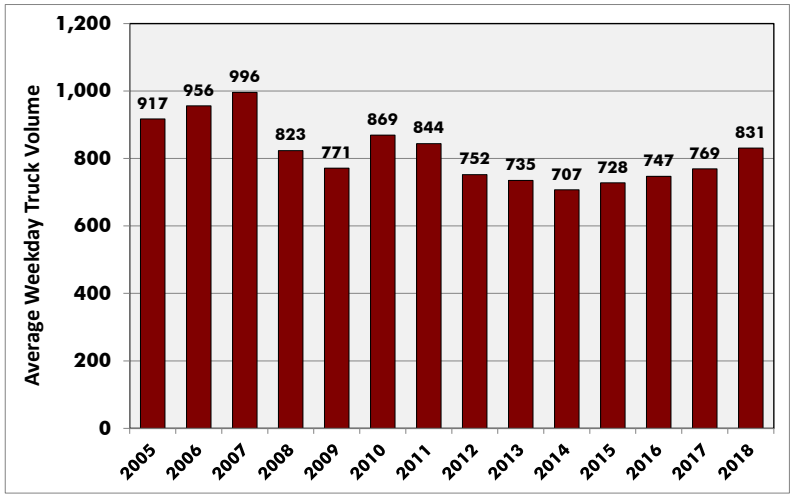


FIGURE 37 – COLEMAN BRIDGE (ROUTE 17) AVERAGE WEEKDAY TRUCK VOLUMES, 2005 - 2018

Source: HRTPO analysis of VDOT data.

Combined, I-64 and Route 17 accounted for 39% of all trucks passing through the region's major gateways in 2018. This is down from 42% in 2006 (**Figure 38**). The share of trucks using Hampton Roads gateways has been shifting over the last decade from I-64 towards Routes 58 and 460. More trucks now use the combination of Routes 58/460 to enter or exit the region than use I-64.

DAILY TRUCK MOVEMENTS

Figure 39 on pages 69-70 shows the 2017 existing weekday truck volumes and percentages for roadways within the Historic Triangle. **Maps 18 and 19** on pages 71-72 provide a geographic depiction of these 2017 existing weekday truck volumes and percentages within each locality.

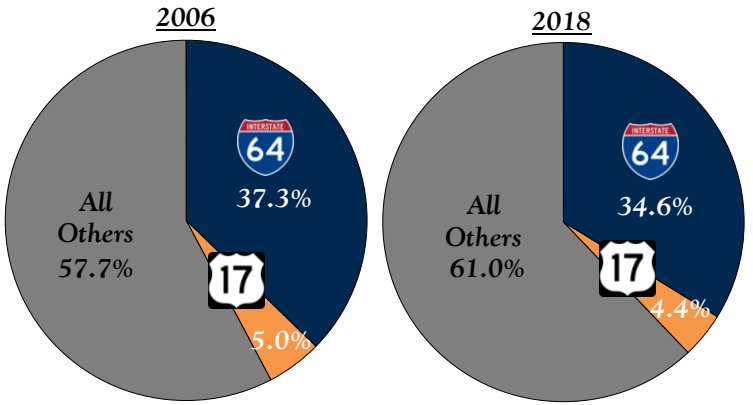


FIGURE 38 – SHARE OF TRUCKS PASSING THROUGH REGIONAL GATEWAYS EACH WEEKDAY, 2006 AND 2018

Source: HRTPO analysis of VDOT and CBBT data.

James City County

I-64 carries the highest truck volumes in James City County with approximately 6,800 trucks each weekday between Croaker Road (Route 607) and the York County line. Old Stage Road (Route 30) carries the second highest weekday truck volumes with 1,199 trucks each weekday between the New Kent County line and I-64. Route 199 between Henry Street/Colonial Parkway and Route 60/Route 143/York County line carries the third highest volumes, ranging between 925 and 990 trucks each weekday.

Old Stage Road (Route 30) between the New Kent County line and I-64 has the highest percentage of trucks each weekday at 11.7%. The second highest truck percentage location during a typical weekday is I-64 between the New Kent County line and the York County line with 10.7% in the eastbound direction and 10.3% in the westbound direction. The third highest truck percentage location during a typical weekday is Pocahontas Trail between the York County line and the Newport News City line at 5.9%. The fourth highest truck percentage location during a typical weekday is Barhamsville Road (Route 30) between I-64 and Route 60 with 5.3%.

Williamsburg

Route 199 carries the highest truck volumes in Williamsburg, ranging between 689 and 702 trucks each weekday. Merrimac Trail between the York County line (south) and Capitol Landing Road has the highest percentage of trucks each weekday at 2.3%.

York County

I-64 carries the highest truck volumes in York County with approximately 6,300-6,900 trucks each weekday between the James City County line and Route 199 (east of Williamsburg). Route 199 carries the second highest weekday truck volumes with 856 trucks each weekday between I-64 and Route 60/Route 143/James City County line. George Washington Memorial Highway (Route 17) between Fort Eustis Boulevard (Route 105) and the Gloucester County line (Coleman Bridge) carries the third highest volumes, ranging between 606 and 811 trucks each weekday. Pocahontas Trail (Route 60) between Kingsmill Road and the James City County line carries the fourth highest truck volumes, ranging between 708 and 758 trucks each weekday.

The highest truck percentage location in York County during a typical weekday is I-64 between the James City County line and Route 199 (east of Williamsburg) with 10.7% in the eastbound direction and 10.3% in the westbound direction. Pocahontas Trail between the James City County line at Route 199 and the James City County line east of Busch Gardens has the second highest percentage of trucks each weekday at 5.9%. The third highest truck percentage location during a typical weekday is the Fort Eustis Boulevard Extension between Route 17 and Old York–Hampton Highway at 4.8%.

Trucks along I-64 Peninsula

JAMES CITY COUNTY – ARTERIALS

Route Num	Facility	Segment From	Segment To	2017 Existing Weekday Trucks	2017 Existing Weekday Truck %
30	Barhamsville Rd	I-64	Route 60	546	5.3%
614	Centerville Rd	John Tyler Hwy	Monticello Ave	124	3.1%
614	Centerville Rd	Monticello Ave	News Rd	158	3.1%
614	Centerville Rd	News Rd	Longhill Rd	296	3.1%
614	Centerville Rd	Longhill Rd	Richmond Rd	334	3.1%
910	Colonial Natl Hist Pkwy	Jamestown/Rte 359	Williamsburg CL/Rte 199	14	0.7%
607	Croaker Rd	Route 60	Maxton Ln (Rte 760)	259	2.6%
607	Croaker Rd	Maxton Ln (Rte 760)	I-64	244	2.6%
607	Croaker Rd	I-64	Fenton Mill Rd	145	2.6%
607	Croaker Rd	Fenton Mill Rd	Riverview Rd	82	2.6%
615	Depue Dr	Longhill Rd (Rte 612)	Ironbound Rd	132	1.2%
615	Ironbound Rd	Strawberry Plains Rd	Monticello Ave	130	1.2%
615	Ironbound Rd	Monticello Ave	Williamsburg CL	148	1.2%
615	Ironbound Rd/News Rd	John Tyler Hwy	Monticello Ave	110	1.2%
615	Ironbound Rd/Sandy Bay Rd	Jamestown Rd	John Tyler Hwy	130	1.2%
31	Jamestown Rd	James River/Ferry	Colonial Parkway (Rte 359)	80	1.1%
31	Jamestown Rd	Colonial Parkway (Rte 359)	Sandy Bay Rd (Rte 681)	80	1.1%
31	Jamestown Rd	Sandy Bay Rd (Rte 681)	Neck-O-Land Rd	97	1.1%
31	Jamestown Rd	Neck-O-Land Rd	Williamsburg CL	97	1.1%
5	John Tyler Hwy	Charles City CL	Monticello Ave	71	1.6%
5	John Tyler Hwy	Monticello Ave	Centerville Rd (Rte 614)	96	1.6%
5	John Tyler Hwy	Centerville Rd (Rte 614)	Ironbound Rd (Rte 615)	130	1.6%
5	John Tyler Hwy	Ironbound Rd (Rte 615)	Stanley Dr (Rte 712)	175	1.6%
5	John Tyler Hwy	Stanley Dr (Rte 712)	Route 199	292	1.6%
612	Longhill Rd	Centerville Rd (Rte 614)	Olde Towne Rd (Rte 658)	95	1.2%
612	Longhill Rd	Olde Towne Rd (Rte 658)	Route 199	200	1.2%
612	Longhill Rd	Route 199	Depue Dr	240	1.2%
143	Merrimac Trl	Newport News CL @ I-64	York CL (South Of Grove Int)	225	1.9%
143	Merrimac Trl	York CL @ Route 199	Penniman Rd (York CL)	320	1.9%
900	Monticello Ave	John Tyler Hwy	Centerville Rd (Rte 614)	128	1.6%
900	Monticello Ave	Centerville Rd (Rte 614)	News Rd	158	1.3%
615	Monticello Ave	News Rd	Route 199	548	1.4%
930	Monticello Ave	Route 199	Ironbound Rd (Rte 615)	177	0.8%
30	Old Stage Rd	New Kent CL	Barnes Rd (Rte 601 S)	1,199	11.7%
30	Old Stage Rd	Barnes Rd (Rte 601 S)	I-64	1,199	11.7%
658	Olde Towne Rd	Longhill Rd	Richmond Rd	121	1.5%
60	Pocahontas Trl	Williamsburg CL	York CL @ 199	127	1.4%
60	Pocahontas Trl	York CL	Basf Rd/Route 60 Relocation	603	5.9%
60	Pocahontas Trl	Basf Rd/Route 60 Relocation	Newport News CL	735	5.9%
60	Richmond Rd	New Kent CL	Route 30	104	1.8%
60	Richmond Rd	Route 30	Croaker Rd (Rte 607)	271	1.8%
60	Richmond Rd	Croaker Rd (Rte 607)	Lightfoot Rd (Rte 646)	387	1.8%
60	Richmond Rd	Lightfoot Rd (Rte 646)	Centerville Rd (Rte 614)	387	1.8%
60	Richmond Rd	Centerville Rd (Rte 614)	Route 199	416	1.8%
60	Richmond Rd	Route 199	Olde Towne Rd (Rte 658)	232	1.8%
60	Richmond Rd	Olde Towne Rd (Rte 658)	Williamsburg CL	198	0.9%
30	Rochambeau Dr	Route 60	0.7 Mi East Of Ashington Way	164	1.8%
30	Rochambeau Dr	0.7 Mi East Of Ashington Way	Croaker Rd (Rte 607)	164	1.8%
199	Route 199	John Tyler Hwy (Rte 5)	Williamsburg CL	689	1.9%
199	Route 199	Williamsburg CL	Henry St/Colonial Pkwy	648	1.9%
199	Route 199	Henry St/Colonial Pkwy	Mounts Bay Rd/Quarterpath Rd	990	2.9%
199	Route 199	Mounts Bay Rd/Quarterpath Rd	Rte 60/Rte 143/York CL	925	2.9%
616	Strawberry Plains Rd	John Tyler Hwy/Route 199	Ironbound Rd	90	0.9%

WILLIAMSBURG – ARTERIALS

Route Num	Facility	Segment From	Segment To	2017 Existing Weekday Trucks	2017 Existing Weekday Truck %
5	Boundary St	Jamestown Rd	Francis St	91	1.0%
60	Bypass Rd	Richmond Rd	York CL	233	0.9%
60	Bypass Rd	Route 132/York CL	Page St	224	1.5%
5	Capitol Landing Rd	Bypass Rd	Merrimac Trail	126	1.7%
970	Colonial Natl Hist Pkwy	James City CL/Rte 199	York CL	21	0.7%
5	Francis St	Boundary St	Henry St	67	1.0%
132	Henry St S.	Route 199	Francis St	37	1.2%
5	Henry St	Francis St	Lafayette St	53	1.0%
132	Henry St N.	Lafayette St	Rte 132Y	127	2.1%
915	Ironbound Rd	James City CL	Depue Dr	148	1.2%
915	Ironbound Rd	Depue Dr	Longhill Rd	93	0.9%
915	Ironbound Rd	Longhill Rd	Richmond Rd	115	0.9%
31	Jamestown Rd	James City CL	Rte 199	183	1.1%
5	Jamestown Rd	Rte 199	John Tyler Ln	88	1.0%
5	Jamestown Rd	John Tyler Ln	College Creek	94	1.0%
5	Jamestown Rd	College Creek	Boundary St	94	1.0%
900	Lafayette St	Richmond Rd	Henry St	202	2.0%
5	Lafayette St	Henry St	Capitol Landing Rd	204	2.0%
5	Lafayette St	Capitol Landing Rd	Page St	168	2.0%
143	Merrimac Trail	York CL (South)	Capitol Landing Rd	164	2.3%
143	Merrimac Trail	Capitol Landing Rd	York CL (North)	189	1.9%
321	Monticello Ave	Ironbound Rd	Richmond Rd	127	0.8%
60	Page St	Bypass Rd	Second St	151	1.0%
60	Page St	Second St	York St	152	1.0%
945	Quarterpath Rd	Route 199	York St	17	1.4%
60	Richmond Rd	James City CL	Ironbound Rd	198	0.9%
60	Richmond Rd	Ironbound Rd	Bypass Rd	234	0.9%
950	Richmond Rd	Bypass Rd	Monticello Ave	244	1.2%
950	Richmond Rd	Monticello Ave	Brooks St	182	1.7%
950	Richmond Rd	Brooks St	Boundary St	182	1.7%
132	Route 132	Route 132Y	Bypass Rd/York CL	193	2.1%
132	Route 132Y	Route 132	Colonial Pkwy	61	1.0%
199	Route 199	James City CL (West)	Jamestown Rd	689	1.9%
199	Route 199	Jamestown Rd	James City CL (East)	702	1.9%
900	Second St	Page St	York CL	184	1.3%
	Treyburn Dr	Monticello Ave	Ironbound Rd	28	0.9%
60	York St	Page St	James City CL	179	1.4%

FIGURE 39 – WEEKDAY TRUCK VOLUMES AND PERCENTAGES BY ROADWAY SEGMENT IN THE HISTORIC TRIANGLE, 2017

Source: HRTPO analysis of VDOT data.

York County – Arterials

Route Num	Facility	Segment From	Segment To	2017 Existing Weekday Trucks	2017 Existing Weekday Truck %
1020	Ballard St	Colonial Pkwy	Cook Rd	81	1.2%
238	Ballard St	Cook Rd	Coast Guard Training Center	68	2.4%
600	Big Bethel Rd	Hampton CL	Hampton Hwy (Rte 134)	69	0.7%
600	Big Bethel Rd	Hampton Hwy (Rte 134)	Victory Blvd (Rte 171)	36	0.7%
60	Bypass Rd	Williamsburg CL	Waller Mill Rd	233	0.9%
60	Bypass Rd	Waller Mill Rd	Route 132/Williamsburg CL	233	0.9%
143	Capitol Landing Rd	Williamsburg CL	Route 132	182	1.9%
143	Capitol Landing Rd	Route 132	I-64	366	1.9%
950	Colonial Natl Hist Pkwy	Williamsburg CL	Ballard St	42	0.7%
704	Cook Rd	George Washington Mem Hwy	Goosley Rd	46	0.6%
238	Cook Rd	Goosley Rd	Ballard St	51	0.6%
173	Denbigh Blvd	Newport News CL	George Washington Mem Hwy	210	1.4%
782	East Yorktown Rd	Victory Blvd	Poquoson CL	41	0.7%
105	Fort Eustis Blvd	Newport News CL	George Washington Mem Hwy	714	3.8%
1050	Fort Eustis Blvd Ext	George Washington Mem Hwy	Old York - Hampton Hwy	165	4.8%
17	George Washington Mem Hwy	Newport News CL	Victory Blvd (Rte 171)	476	1.4%
17	George Washington Mem Hwy	Victory Blvd (Rte 171)	Hampton Hwy (Rte 134)	514	1.4%
17	George Washington Mem Hwy	Hampton Hwy (Rte 134)	Dare Rd	757	1.4%
17	George Washington Mem Hwy	Dare Rd	Denbigh Blvd (Rte 173)	530	1.4%
17	George Washington Mem Hwy	Denbigh Blvd (Rte 173)	Fort Eustis Blvd (Rte 105)	511	1.4%
17	George Washington Mem Hwy	Fort Eustis Blvd (Rte 105)	Cook Rd	811	2.2%
17	George Washington Mem Hwy	Cook Rd	Goosley Rd (Rte 238)	606	2.2%
17	George Washington Mem Hwy	Goosley Rd (Rte 238)	Gloucester CL (Coleman Bridge)	763	2.2%
173	Goodwin Neck Rd	George Washington Mem Hwy	Wolf Trap Rd	395	4.0%
238	Goosley Rd	Old Williamsburg Rd	Crawford Rd	158	2.4%
238	Goosley Rd	Crawford Rd	George Washington Mem Hwy	158	2.4%
238	Goosley Rd	George Washington Mem Hwy	Cook Rd	38	2.4%
134	Hampton Hwy	George Washington Mem Hwy	Victory Blvd (Rte 171)	125	0.7%
134	Hampton Hwy	Victory Blvd (Rte 171)	Big Bethel Rd (Rte 600)	183	0.7%
134	Hampton Hwy	Big Bethel Rd (Rte 600)	NCL Hampton	177	0.7%
646	Lightfoot Rd	Route 60	Mooretown Rd	145	1.5%
143	Merrimac Trail	James City CL	Busch Gardens Interchange	210	1.9%
143	Merrimac Trail	Busch Gardens Interchange	Route 199/James City CL	345	1.9%
143	Merrimac Trail	Penniman Rd/James City CL	Second St	330	1.9%
143	Merrimac Trail	Second St	Williamsburg CL	147	1.9%
603	Mooretown Rd	Waller Mill Rd	Airport Rd	89	1.4%
603	Mooretown Rd	Airport Rd	Old Mooretown Rd	131	1.4%
603	Mooretown Rd	Old Mooretown Rd	Route 199	287	1.4%
603	Mooretown Rd	Route 199	Lightfoot Rd	144	1.4%
646	Newman Rd	I-64	Fenton Mill Rd	42	1.5%
238	Old Williamsburg Rd	Newport News CL	Baptist Rd/Main Rd	227	2.4%
238	Old Williamsburg Rd	Baptist Rd/Main Rd	Goosley Rd	228	2.4%
641	Penniman Rd (Rte 641)	Route 199	Colonial Pkwy	102	1.6%
60	Pocahontas Trail	Jcc Line @ Rte 199	Kingsmill Rd	507	5.9%
60	Pocahontas Trail	Kingsmill Rd	Busch Gardens Interchange	708	5.9%
60	Pocahontas Trail	Busch Gardens Interchange	James City CL	758	5.9%
132	Route 132	Bypass Rd/Williamsburg CL	Route 143 - Capitol Landing Rd	291	2.8%
199	Route 199	Rte 60/Rte 143/Jcc Line	I-64	856	2.9%
199	Route 199	I-64	Marquis Pkwy	540	2.9%
199	Route 199	Marquis Pkwy	Rte 641 (Penniman Rd)	274	2.9%
162	Second St	Williamsburg CL	Merrimac Trail	184	1.3%
171	Victory Blvd	Newport News CL	George Washington Mem Hwy	586	1.2%
171	Victory Blvd	George Washington Mem Hwy	Hampton Hwy (Rte 134)	358	1.1%
171	Victory Blvd	Hampton Hwy (Rte 134)	Big Bethel Rd (Rte 600)	221	1.1%
171	Victory Blvd	Big Bethel Rd (Rte 600)	Carys Chapel Rd (Rte 782)	229	1.1%
171	Victory Blvd	Carys Chapel Rd (Rte 782)	Poquoson CL	151	1.1%
713	Waller Mill Rd	Route 60	Mooretown Rd	71	1.5%

James City County – Interstates and Freeways

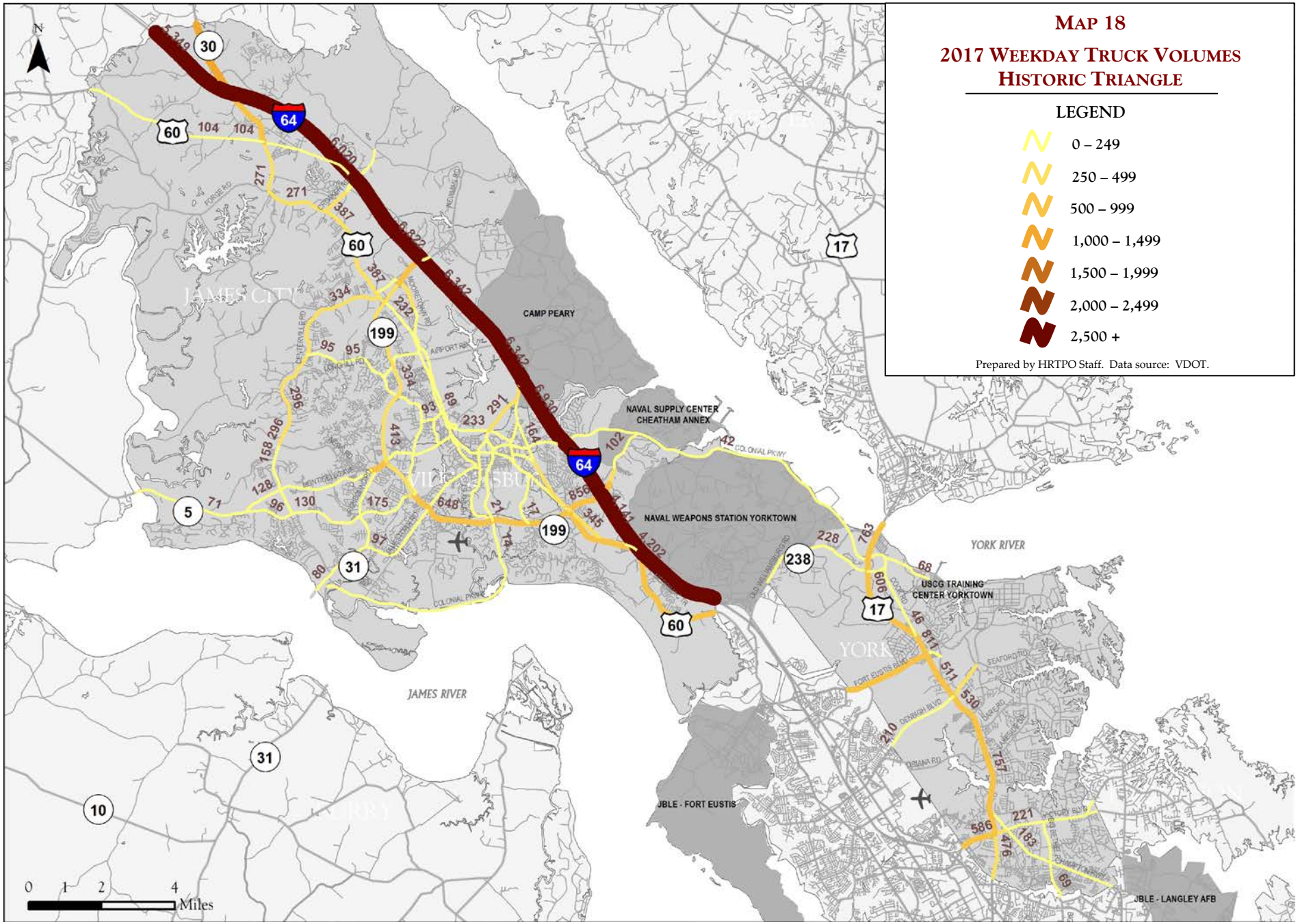
Facility	Segment From	Segment To	DIR	2017 Existing Weekday Trucks	2017 Existing Weekday Truck %
I-64	New Kent CL	Rte 30	EB	2,772	10.7%
			WB	2,577	10.3%
I-64	Rte 30	Croaker Rd (Rte 607)	EB	3,115	10.7%
			WB	2,905	10.3%
I-64	Croaker Rd (Rte 607)	York CL	EB	3,553	10.7%
			WB	3,269	10.3%
I-64	York CL	Newport News CL	EB	2,007	5.1%
			WB	2,195	5.0%
Route 199	York CL	Richmond Rd (Rte 60)	EB	232	1.9%
			WB	237	1.9%
Route 199	Richmond Rd (Rte 60)	Longhill Rd (Rte 612)	EB	170	1.3%
			WB	164	1.3%
Route 199	Longhill Rd (Rte 612)	Monticello Ave (Rte 321)	EB	205	1.3%
			WB	208	1.4%
Route 199	Monticello Ave (Rte 321)	John Tyler Hwy (Rte 5)	EB	185	1.3%
			WB	190	1.3%

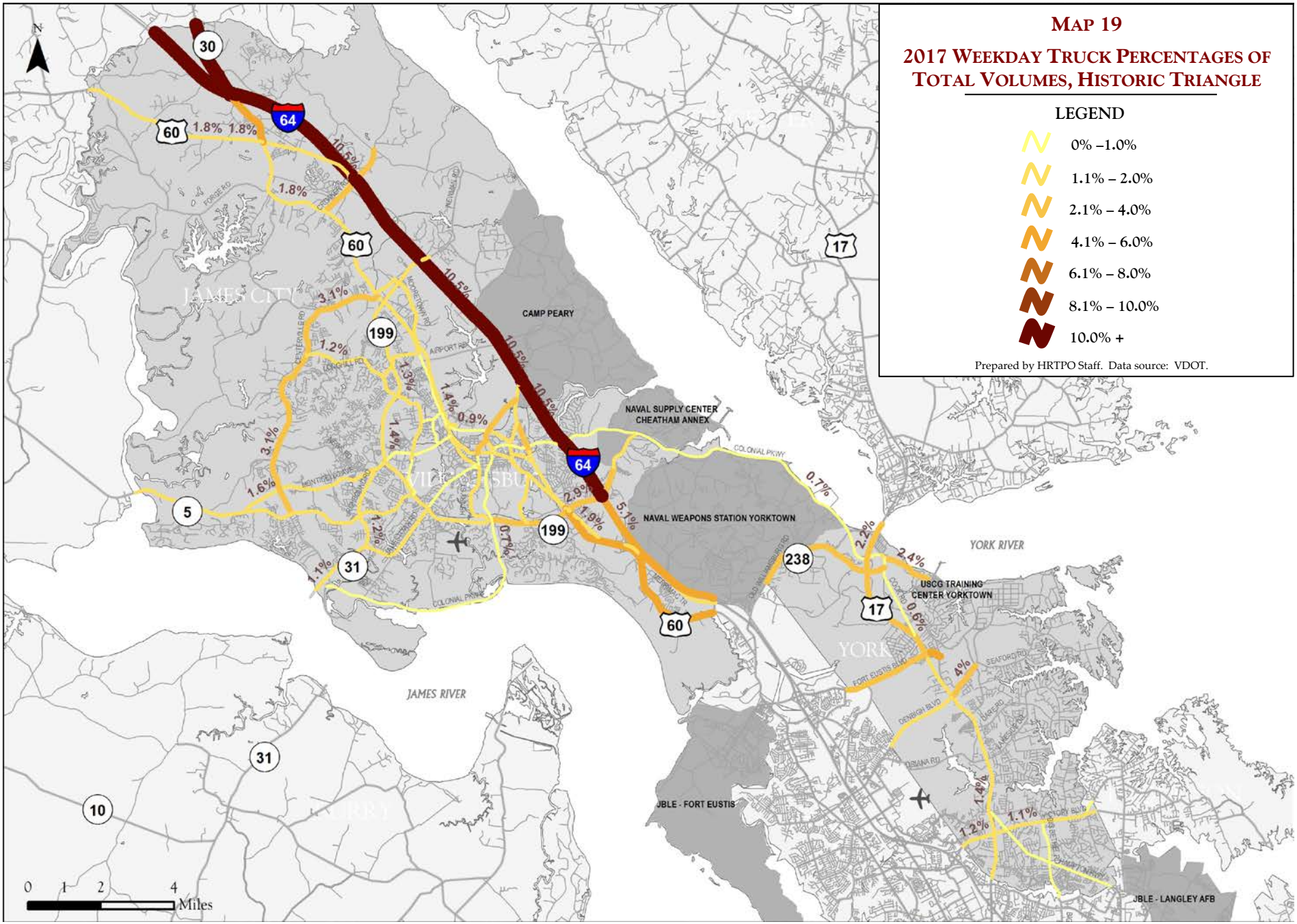
York County – Interstates and Freeways

Facility	Segment From	Segment To	DIR	2017 Existing Weekday Trucks	2017 Existing Weekday Truck %
I-64	James City CL	Rte 199/646	EB	3,553	10.7%
			WB	3,269	10.3%
I-64	Rte 199/646	Rte 143	EB	3,244	10.7%
			WB	3,098	10.3%
I-64	Rte 143	Rte 199 (East Of Williamsburg)	EB	3,533	10.7%
			WB	3,397	10.3%
I-64	Rte 199 (East Of Williamsburg)	Busch Gardens Interchange	EB	2,122	5.1%
			WB	2,019	5.0%
I-64	Busch Gardens Interchange	James City CL	EB	2,007	5.1%
			WB	2,195	5.0%
Route 199	James City CL (Westside)	Mooretown Rd	EB	232	1.9%
			WB	237	1.9%
Route 199	Mooretown Rd	I-64	EB	300	1.9%
			WB	295	2.1%

Figure 39 (continued) – Weekday Truck Volumes and Percentages by Roadway Segment in the Historic Triangle, 2017

Source: HRTPO analysis of VDOT data.


MAP 18
2017 WEEKDAY TRUCK VOLUMES
HISTORIC TRIANGLE
LEGEND
0 – 249
250 – 499
500 – 999
1,000 – 1,499
1,500 – 1,999
2,000 – 2,499
2,500 +
Prepared by HRTPO Staff. Data source: VDOT.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
YORK RIVER
JAMES RIVER
JAMES CITY
YORK
0 1 2 4 Miles


MAP 19
2017 WEEKDAY TRUCK PERCENTAGES OF TOTAL VOLUMES, HISTORIC TRIANGLE
LEGEND
0% –1.0%
1.1% – 2.0%
2.1% – 4.0%
4.1% – 6.0%
6.1% – 8.0%
8.1% – 10.0%
10.0% +
Prepared by HRTPO Staff. Data source: VDOT.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
0 1 2 4 Miles

Highway Gateways Used by Port Trucks

The HRTPO's Highway Gateways Used by Port Trucks Study[11] shows which highway routes are primarily used by port-related trucks. For this analysis, HRTPO staff analyzed StreetLight origin-destination data, which utilizes location-based services data and GPS-based fleet management data for truck travel. StreetLight was used to determine the highways used by trucks from Port-Related Distribution Centers.

Figure 40 shows the average weekday share of trucks passing through regional highway gateways from Port-Related Distribution Centers in Hampton Roads. This analysis shows that I-64 on the Peninsula is the primary gateway (57%) followed by US Route 460 (18%) and US Route 58 (16%).

Figure 41 shows the average weekday share of trucks passing through regional highway gateways from Port-Related Distribution Centers on the Peninsula. This analysis shows that I-64 on the Peninsula (93%) is the primary gateway for trucks.

Figure 42 on page 74 compares the average weekday share of all trucks versus port-related trucks passing through regional highway gateways in Hampton Roads. I-64 on the Peninsula appears to be even more important to port-related trucks than it is to all trucks, which highlights the importance of I-64 through the Historic Triangle as a major regional gateway for port-related truck traffic.

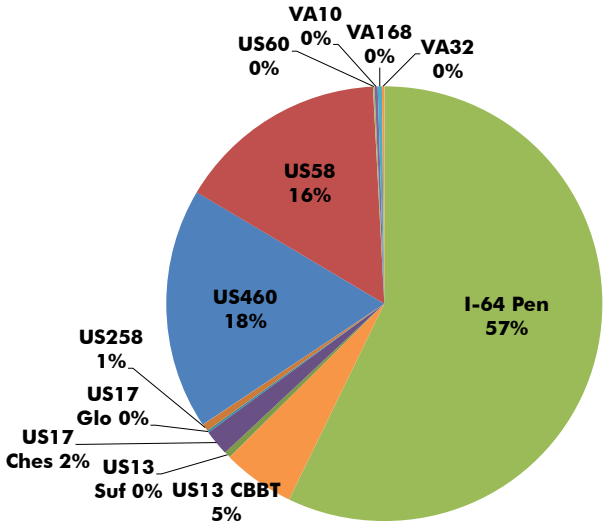


Figure 40 – Truck Usage of Gateways by Hampton Roads Port-Related Distribution Centers, July 2016 - June 2017
Source: HRTPO analysis of StreetLight data.

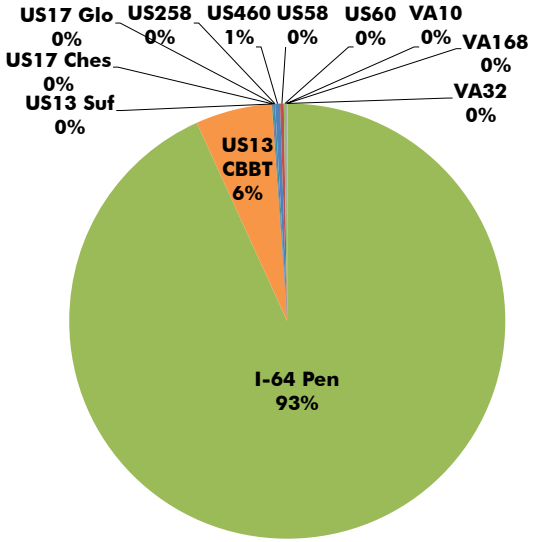


Figure 41 – Truck Usage of Gateways by Peninsula Port-Related Distribution Centers, July 2016 - June 2017
Source: HRTPO analysis of StreetLight data.

[11] *Highway Gateways Used by Port Trucks*, HRTPO, March 2018.

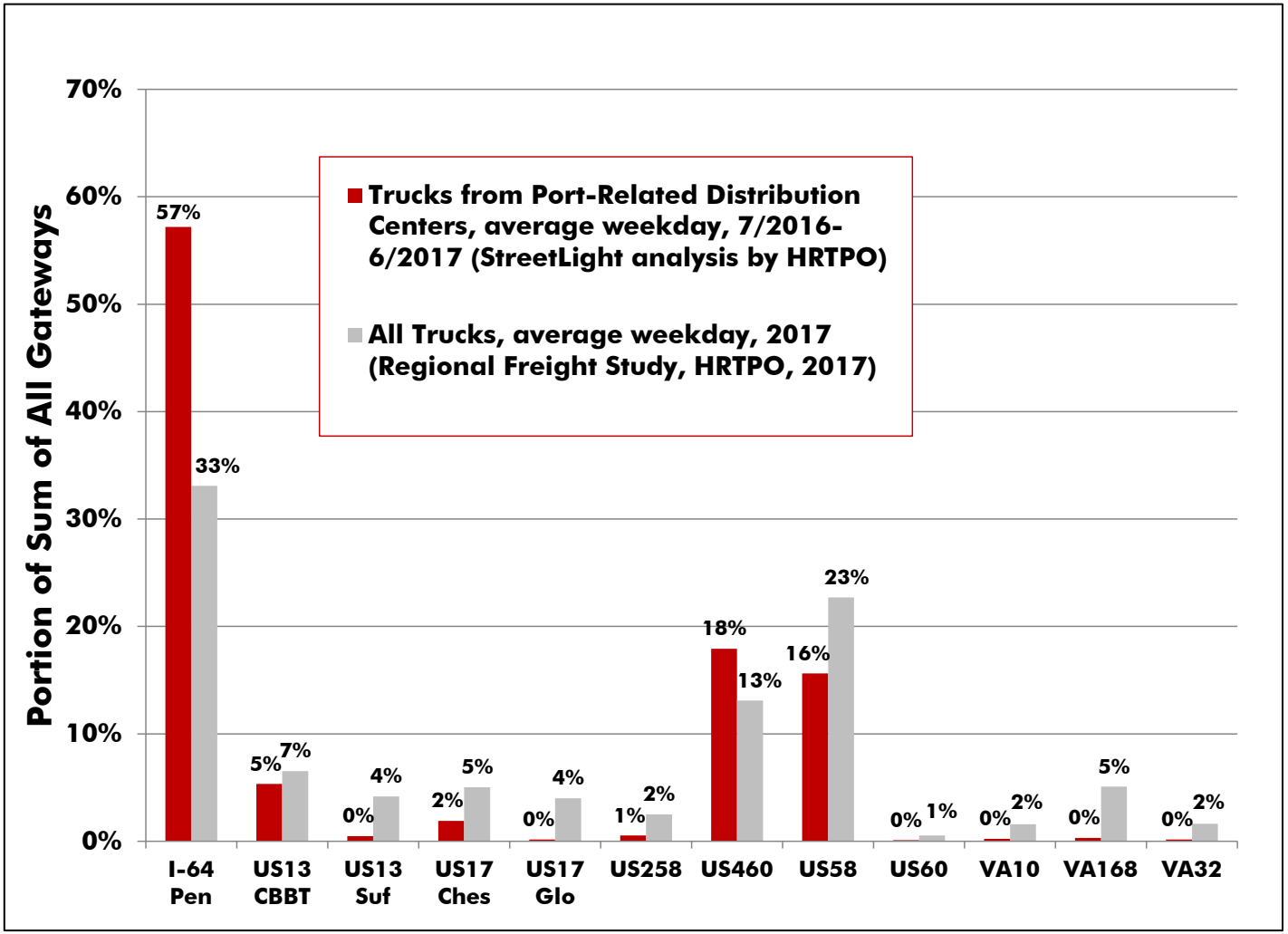


FIGURE 42 – COMPARISON OF TRUCK USAGE THROUGH REGIONAL GATEWAYS

Source: HRTPO analysis of StreetLight data. "All Trucks" from HRTPO Regional Freight Study was updated with 2017.

AIR SERVICE

Three commercial service airports are located within 50 miles of the Historic Triangle. The closest airport to the Historic Triangle is Newport News-Williamsburg International Airport (code PHF); however, residents and travelers also use Norfolk International Airport (ORF) and Richmond International Airport (RIC). Corporate aviation service is also provided at Williamsburg Jamestown Airport (JGG). Finally, there are military airport and heliport facilities located at Camp Peary and the Yorktown Naval Weapons Station in York County.

NEWPORT NEWS - WILLIAMSBURG INTERNATIONAL AIRPORT

The Newport News-Williamsburg International Airport (PHF) is located on the border of Newport News and York County. The airport, which is owned and operated by the Peninsula Airport Commission, is currently served by two commercial airlines - Delta Air Lines and American Airlines. These airlines provide non-stop service to Atlanta, Charlotte, and Philadelphia.

Figure 43 shows the enplanements or "passenger boardings" at the Newport News-Williamsburg, Richmond, and Norfolk International Airports from 2000 through 2018. Passenger activity at the Newport News-Williamsburg International Airport increased between 2001 and 2005 but has decreased annually since 2012. A majority of the growth between 2001 and 2005 occurred when low-cost carrier Airtran Airways introduced new and more frequent service. In March 2012, Airtran Airways ceased operations due to their merger with Southwest Airlines, which was already operating at Norfolk International Airport. The departure of Airtran Airways led to a substantial decline in passenger activity at the airport. Another contributor to passenger increases and decreases was Frontier Airlines, which began nonstop service at the airport in 2010 but withdrew service in January 2015.

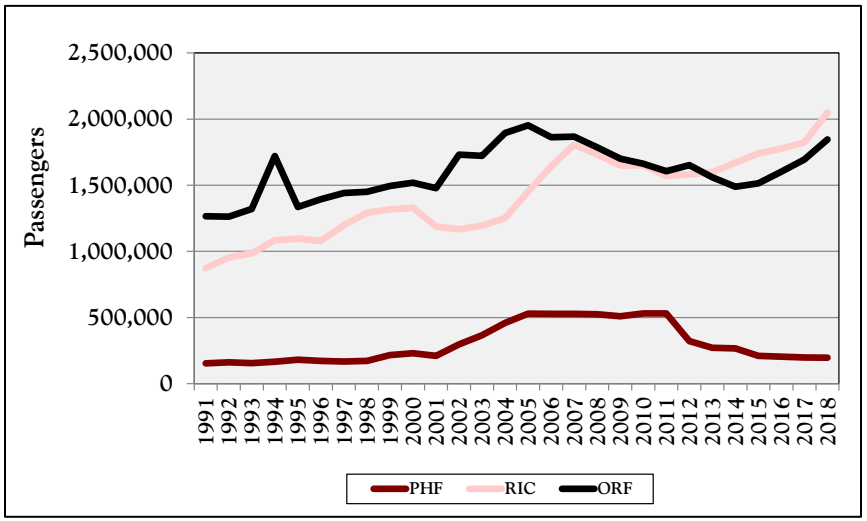


FIGURE 43 - ENPLANEMENTS AT NEWPORT NEWS-WILLIAMSBURG, RICHMOND AND NORFOLK INTERNATIONAL AIRPORTS, 2000-2018

Data Source: Federal Aviation Administration

Norfolk International Airport

Norfolk International Airport (ORF) is the second closest commercial passenger service airport to the Historic Triangle, located about 40 miles from Williamsburg. The airport is owned by the City of Norfolk and operated by the Norfolk Airport Authority. Norfolk International Airport is currently served by six commercial airlines (Allegiant, American, Delta, Frontier, Southwest, and United) that provide nonstop access to 26 airports.

As shown in **Figure 43**, Norfolk International Airport experienced a rise in enplanements between 2000 (1.5 million enplanements) and 2005 (2.0 million enplanements). Passenger levels at Norfolk International Airport decreased throughout the economic downturn but have increased in recent years, up to over 1.8 million enplanements in 2018.


Norfolk International Airport NIA

Richmond International Airport

Historic Triangle residents and travelers also frequently use Richmond International Airport (RIC), which is located about 45 miles from Williamsburg. Richmond International Airport is located in Sandston, Virginia, which is seven miles southeast of downtown Richmond. The airport is currently served by seven commercial airlines (Allegiant, American, Delta, JetBlue, Southwest, Spirit, and United) that provide service on nearly 170 flights each day.

Similar to Norfolk International Airport, Richmond International Airport experienced a decrease in passenger levels throughout the economic downturn. Since 2011, however, enplanements at RIC have increased every year. At 2.0 million enplanements in 2018, Richmond International Airport now carries more passengers than Norfolk International Airport and is the third-busiest airport in Virginia behind Washington D.C.'s two major airports, Dulles International and Ronald Reagan National.


Richmond International Airport RICHMOND TIMES DISPATCH

Williamsburg Jamestown Airport

Located off of Lake Powell Road in James City County, the Williamsburg Jamestown airport is a small, privately owned and operated general aviation airport. It serves small private recreational and business aircraft without scheduled commercial passenger service available. The facility, which includes one 3,200 foot runway with full instrument landing capabilities, also serves as the base for a flight school. There are 52 aircraft based at the airport as of 2017, and an average of 49 operations occurs at the airport per day.

FUTURE CONDITIONS - HIGHWAY

The remainder of this report looks at the future conditions on the Historic Triangle's transportation network, both in near- and long-term horizons. Similar to the Current Conditions chapter, this chapter is divided into separate sections based on transportation mode.

This chapter looks at projected roadway conditions in the Historic Triangle and compares them to existing conditions. It is divided into the following sections:

- **Programmed Roadway Projects** - Includes a description of those projects that are funded and programmed in VDOT's Six-Year Improvement Program and HRTPO's Transportation Improvement Program. This section also provides a description of VDOT's project selection process.
- **Long-Range Planning** - Includes information on the projects, studies, and vision plan included in the current 2040 Hampton Roads Long-Range Transportation Plan, and their projected impact on congestion levels in the area.
- **VTrans** – Includes information from the VTrans statewide long-range multimodal transportation plan and its impact on the Historic Triangle.

In addition, a summary of each of these plans and documents is shown in **Figure 44**.

Document	Author	Description	Time Period
Six-Year Improvement Program (SYIP)	VDOT, DRPT, and the Commonwealth Transportation Board	Outlines planned spending for transportation projects programmed for construction, development, or study statewide over the next six years.	6 years (FY 2020-2025)
Transportation Improvement Program (TIP)	HRTPO	A four-year program for the implementation of surface transportation projects in the Hampton Roads area. The TIP includes all federally-funded and/or regionally significant transportation projects.	4 years (FY 2018-2021)
Long-Range Transportation Plan (LRTP)	HRTPO	A comprehensive and multimodal transportation blueprint that identifies and plans for critically important transportation improvements that impact the region's economic vitality and quality of life. It includes a list of transportation projects that are expected to be constructed based on the anticipated funding available during the time horizon.	20+ Years (2040)
VTrans	Virginia Office of Intermodal Planning and Investment (OIPI)	The Commonwealth of Virginia's statewide long-range multimodal transportation plan. It identifies the overarching vision and goals for transportation in the state and also identifies transportation investment priorities and provides direction on strategies and programs. Recent legislation mandates that the transportation component of each locality's Comprehensive Plan must be consistent with VTrans.	20+ Years (2040)

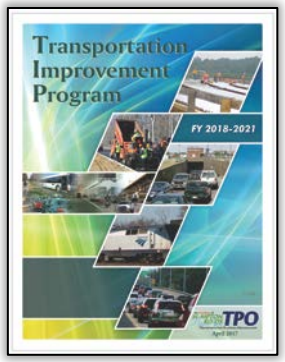
FIGURE 44 – DESCRIPTION OF REGIONAL AND STATEWIDE PLANNING AND PROGRAMMING DOCUMENTS

PROGRAMMED ROADWAY PROJECTS

Programmed roadway improvement projects in Hampton Roads are primarily included in two documents, the Virginia Six-Year Improvement Program (SYIP) and the Hampton Roads Transportation Improvement Program (TIP).

Developed annually, the Six-Year Improvement Program[12] is a statewide document through which the Virginia Commonwealth Transportation Board (CTB) allocates funds for the construction, development, or study of transportation projects. The projects included in the SYIP not only encompass major projects such as new roadway construction and widening existing facilities but also smaller projects such as adding traffic signals, paving shoulders, and adding or extending intersection turn bays. In addition, non-roadway projects such as improvements to bike lanes, sidewalks, rail, and public transportation are also included in the SYIP.

Per its name, the Six-Year Improvement Program includes information on funding allocations for each project over the course of the upcoming six state fiscal years. The SYIP also includes dates for the expected initiation of preliminary engineering design, right-of-way acquisition, and construction phases of each project.



In addition to the SYIP, the Hampton Roads Transportation Improvement Program[13] is also a multi-year document detailing the implementation of transportation projects. The TIP is a federally-mandated, regional document that identifies the programming of transportation funds over a four-year period. It lists all projects for which federal funds are anticipated, along with non-federally funded projects that are determined to be regionally significant.


Upcoming Roadway Project: Longhill Road Widening HRTPO

The TIP is a financially-constrained document, which means that the amount of funding programmed in the TIP cannot exceed the expected amount of available funding. Before any federally-funded and/or regionally significant surface transportation project can be constructed, it must be included in the most recent TIP approved by the HRTPO Board. The TIP must also be consistent with the regional Long-Range Transportation Plan, which is described in detail later in this report.

The Hampton Roads TIP may be revised as needed in order to add new projects, delete projects, and update or change project information. Similar to the SYIP, the TIP not only includes roadway projects but transit, active transportation, enhancement, and freight-related projects as well. Although the TIP (a federally mandated, regional document that covers a 4-year time horizon) and the SYIP (a statewide document that covers a 6-year time horizon) are separate documents, most of the projects included in the TIP are also included in the SYIP.

Many of the projects that are included in the TIP and SYIP are selected through the SMART SCALE process. Signed into law in 2014, Virginia House Bill (HB) 2 was created to ensure that limited

[12] *FY 2020-2025 Six-Year Improvement Program*, Commonwealth Transportation Board, June 2019.

[13] *Hampton Roads Transportation Improvement Program FY 2018-2021*, HRTPO, April 2017, with amendments through February 2019.

tax dollars are invested in the projects that meet the most critical transportation needs in Virginia. Starting with the FY 2017 SYIP, candidate transportation projects throughout the Commonwealth are being scored biennially using a prioritization process – now referred to as SMART SCALE – that is based on an objective analysis of the congestion mitigation, economic development, safety, environmental quality, accessibility, and land use impacts of each project.

SMART SCALE ID	Locality	Project	Approved SMART SCALE Funding
3668	WMB	Lafayette Street at Armistead Ave/Boundry St/Henry St - Signal and Pedestrian Improvements	$91,000
3468	WMB	Lafayette Street from Richmond Rd to Virginia Ave - Street Widening	$4,329,000
3469	WMB	Monticello Ave at Richmond Rd/Lafayette St - Install Roundabout	$6,381,090
3666	WMB	Richmond Rd from Monticello Ave to James City CL - Signal Coordination and Pedestrian Improvements	$203,500
4105	YC	Victory Blvd (Rte 171) capacity enhancements between Hampton Hwy (Rte 134) and Heavens Way (Rte 1740)	$2,420,000

FIGURE 45 – ROADWAY IMPROVEMENT PROJECTS IN THE HISTORIC TRIANGLE APPROVED FOR SMART SCALE FUNDING IN THE FY 2020 PROCESS

Data source: HRTPO analysis of FY 2020 SMART SCALE results. Data does not include projects that solely include active transportation, bridge, or transit improvements.

Each screened candidate project that is submitted by an eligible applicant (which includes localities and regional entities such as Planning District Commissions, Metropolitan Planning Organizations, and transit agencies) is scored and ranked, and the Commonwealth Transportation Board (CTB) uses this information as guidance when selecting projects for inclusion in the Six-Year Improvement Program. This process is used to allocate funding from the construction District Grants Program (DGP) and the High-Priority Projects Program (HPPP), and projects must meet an identified need in the VTrans statewide long-range multimodal transportation plan (described later in this report).

As part of the SMART SCALE process, different weights are applied to each of the six factors in different parts of the state. All three Historic Triangle localities, along with most of Hampton Roads, are in Weighting Category A. Congestion mitigation is a priority for areas in Category A, with 45% of the candidate project's SMART SCALE Project Score based on congestion mitigation in these areas. Other factors, such as economic development (5%) and safety (5%), have much lower weights in Category A areas than in other areas of the state.

Twelve projects were submitted by James City County, Williamsburg, and York County officials as part of the FY 2020 SMART SCALE process. In January 2019 the CTB was presented with a list of projects recommended by staff for funding. Seven of these twelve projects – totaling $18 million – were on the recommended list for SMART SCALE funding. Five of these projects (**Figure 45**) include roadway improvements. The five projects were approved by the CTB in June 2019 and were included in the FY 2020-2025 Six-Year Improvement Program. Funding for each project is allocated in Fiscal Years 2024 and 2025.

Figure 46 on page 81 includes the 26 roadway projects in the Historic Triangle that are included in the current SYIP and/or TIP, and **Map 20** on page 88 shows the location of these projects. Each project's projected construction start date and cost are also included. The largest project is Segment III of the I-64 widening project, comprising $123 million in funding. Excluding the I-64 widening project, these improvements account for a total of $192 million in project costs over the next six years, with $127 million being allocated to projects in James City County, $27 million being allocated to projects in Williamsburg, and $38 million being allocated to projects in York County.

More information on upcoming bridge replacement and rehabilitation projects is included in the Bridge section of this report, and more information on active transportation facilities is included in the Active Transportation section.

JAMES CITY COUNTY

UPC	Project	Projected Construction Start	Project Cost
102944	Centerville Rd (Rte 614) at News Rd (Rte 613) - Intersection Improvements	2020	$4,071,500
100920	Croaker Rd (Rte 607) - Widening to 4 lanes between Route 60 and JCC Library	2023	$18,611,700
113262	Grove Subdivision Streets - Reconstruction	2020	$1,173,700
100921	Longhill Rd (Rte 612) - Widening to 4 lanes between Olde Towne Rd (Rte 658) and Route 199	2019	$19,795,300
108805	Longhill Rd (Rte 612) at Olde Towne Rd (Rte 658) - Turn Lane Improvements	2021	$635,500
102980	Pocahontas Trail (US Rte 60) - Reconstruction	2026	$30,681,000
113271	Richmond Road (US Rte 60) in Toano - Reconstruction	2021	$1,665,600
100200	Skiffes Creek Connector - New Facility	2025	$50,503,700

WILLIAMSBURG

UPC	Project	Projected Construction Start	Project Cost
111022	Capitol Landing Rd at Bypass Rd - Intersection Improvements	2024	$2,144,800
112658	Capitol Landing Rd - Corridor Improvements	2022	$6,360,000
113827	Citywide - Flashing Yellow Arrow Intersection Improvements	2023	$243,000
111018	Ironbound Road - Roadway Improvements (Phase 2)	2024	$1,922,700
111020	Ironbound Road - Roadway Improvements (Phase 3)	2024	$3,312,400
115503	Lafayette Street at Armistead Ave/Boundry St/Henry St - Signal and Pedestrian Improvements	2026	$91,000
115339	Lafayette Street from Richmond Rd to Virginia Ave - Street Widening	2027	$5,870,000
115505	Monticello Ave at Richmond Rd/Lafayette St - Install Roundabout	2028	$6,381,100
115418	Richmond Rd from Monticello Ave to James City CL - Signal Coordination and Pedestrian Improvements	2026	$203,500

YORK COUNTY

UPC	Project	Projected Construction Start	Project Cost
111787	GW Mem Hwy (US Rte 17) - Widening to 6 lanes between Wolf Trap Rd (Rte 630) and Denbigh Blvd (Rte 173)	2025	$19,322,200
106689	I-64 - Widening to 6 lanes between Route 199/646 and Route 199/Marquis Center Pkwy (Segment III)	Underway	$122,894,000
104337	Route 143 at East Rochambeau Dr (F-137) and I-64 Exit 238 - Install Roundabout	2019	$1,751,000
111791	Victory Blvd (Rte 171) - Widening to 6 lanes between GW Mem Hwy (Rte 17) and Hampton Hwy (Rte 134)	2025	$4,643,300
113633	Victory Blvd (Rte 171) at Kiln Creek Pkwy West Intersection - Right Turn Lane Extension	2025	$414,800
107306	Water Country Pkwy (Rte 640) - Relocation at Route 199	2019	$2,156,000
113273	Potomac Run St (Rte 1734) - Extension from Patuxent Turn to Brentmade Dr	2020	$204,500
16314	Penniman Rd at Government Rd - Intersection Improvements	2021	$5,744,300
115509	Victory Blvd (Rte 171) capacity enhancements between Hampton Hwy (Rte 134) and Heavens Way (Rte 1740)	2028	$3,630,000

FIGURE 46 – ROADWAY IMPROVEMENTS IN THE HISTORIC TRIANGLE PROGRAMMED IN THE SYIP FOR CONSTRUCTION

Data source: HRTPO analysis of the Virginia SYIP. UPC is the Universal Project Code number. Data does not include projects that solely include active transportation, bridge, or transit improvements.

Long-Range Planning

The Hampton Roads Transportation Planning Organization is responsible for producing the regional Long-Range Transportation Plan (LRTP). The LRTP is a comprehensive and multimodal transportation blueprint that identifies and plans for critically important transportation improvements that impact the region's economic vitality and every citizen's quality of life. The LRTP is designed to meet the transportation goals of the HRTPO, which include enhancing mobility and accessibility for all users, increasing reliability across modes, improving safety, minimizing negative impacts to the environment, and identifying funding to maintain and improve the transportation system.

The LRTP contains a list of transportation projects that are expected to be constructed based on the anticipated funding available during the time horizon. These projects cover several modes of surface transportation; however, only roadway projects that add capacity to the regional roadway network, fixed-guideway transit projects (which are those that use exclusive right-of-way such as trains), and certain active transportation projects are typically individually identified in the plan. The LRTP also contains a number of "studies" as well as a "Vision Plan". These include projects that were submitted for consideration but not included for construction due to insufficient funding over the horizon period. Smaller projects, such as traffic signals and turn bays, are not individually identified in the LRTP. This differs from the Six-Year Improvement Program (SYIP) and Transportation Improvement Program (TIP) described in the previous section, which include all of these types of projects.

The LRTP must be updated every five years in metropolitan areas such as Hampton Roads that are in attainment of all applicable National Ambient Air Quality Standards. The LRTP must encompass a minimum of a 20-year time horizon, which is much longer than the 6-year time horizon of the SYIP and the 4-year time horizon of the TIP. Many stakeholders are involved in the preparation of the LRTP including transportation planners and engineers from each city and county, VDOT, the military, the Port, local transit officials, and the public.

Projects included in the 2040 Hampton Roads Long-Range Transportation Plan – which was approved by the HRTPO Board in July 2016 – were chosen based on a variety of factors, including the results of a project prioritization process. This prioritization process ranked candidate projects based on each project's utility in terms of capacity and operational effectiveness; viability in terms of progress in design, funding, and permitting; and economic vitality in terms of its potential to stimulate economic growth.

2040 LRTP Projects

There are nine roadway projects in the Historic Triangle that are included in the 2040 LRTP for construction (excluding those projects that have been completed, are currently underway, or solely include active transportation or transit improvements.) These projects are shown in **Figure 47** on page 83 and **Map 20** on page 88. Projects include constructing the Skiffes Creek Connector and widening sections of Croaker Road, George Washington Memorial Highway (Route 17), Longhill Road, and Victory Boulevard. Many of these projects are also included in the Six-Year Improvement Program (SYIP) and Transportation Improvement Program (TIP) as shown in the previous section of this study.

2040 LRTP Studies

In addition to fiscally-constrained projects, the LRTP also includes "studies". This category includes Environmental Impact Studies (EIS), other preliminary engineering tasks, or conceptual project designs where funding for construction is not provided in the fiscally-constrained plan. Generally, these studies scored high enough in the LRTP's project prioritization process to warrant inclusion in the plan but did not score high enough to be included in the fiscally-constrained project list.

One location in the Historic Triangle – Victory Boulevard in York County – is included as a study in the 2040 Hampton Roads LRTP. More information on this project is detailed below.

Victory Boulevard

This project would widen Victory Boulevard from 2 to 4 lanes between Hampton Highway and the Poquoson City Limits. Funding to widen Victory Boulevard from 4 to 6 lanes between George Washington Memorial Highway and Hampton Highway is included in the SYIP with construction expected to begin in 2025.

Victory Boulevard is currently severely congested during the PM Peak Period in the eastbound direction between Hampton Highway and Big Bethel Road, and moderately congested eastbound between Big Bethel Road and the Poquoson City Limits. By 2040, the entire length of this section of Victory Boulevard is expected to experience severe congestion during the PM Peak Period.

The estimated cost of the widening project is $48 million in the year of expenditure. A total of $5 million is allocated in the 2040 LRTP for the preliminary engineering phase (PE) of this project.

JAMES CITY COUNTY

2040 Project ID	Project	Project Cost (Year of Expenditure)
2040-204	Centerville Rd (Rte 614) at News Rd (Rte 613) - Intersection Improvements	$3,000,000
2040-52	Croaker Rd (Rte 607) - Widening to 4 lanes between Route 60 and JCC Library	$15,000,000
2040-59	Hicks Island Road (Rte 601) over Diascund Creek - Bridge Replacement	$2,000,000
2040-58	Jamestown Rd (Rte 31) Over Powhatan Creek - Bridge Replacement	$4,000,000
2040-53	Longhill Rd (Rte 612) - Widening to 4 lanes between Olde Towne Rd (Rte 658) and Route 199	$18,000,000
2040-61	Skiffes Creek Connector - New Facility	$53,000,000

WILLIAMSBURG

2040 Project ID	Project	Project Cost (Year of Expenditure)
2040-210	Bypass Rd at Page St/Capitol Landing Rd - Intersection Improvements	$9,000,000

YORK COUNTY

2040 Project ID	Project	Project Cost (Year of Expenditure)
2040-199	GW Mem Hwy (US Rte 17) between Wolf Trap Road and Denbigh Boulevard - Widen to 6 lanes	$29,000,000
2040-202	Victory Blvd (Rte 171) between GW Mem Hwy (US Rte 17) and Hampton Hwy (Rte 134) - Widen to 6 lanes	$5,000,000

FIGURE 47 – ROADWAY IMPROVEMENTS IN THE HISTORIC TRIANGLE INCLUDED FOR CONSTRUCTION IN THE 2040 LRTP

Data source: HRTPO. Data does not include projects that solely include active transportation or transit improvements. Also does not include projects in the LRTP that have been completed or are under construction.

A project that includes capacity enhancements to Victory Boulevard between Hampton Highway and Heavens Way was approved for SMART SCALE funding in the FY 2020 process. These capacity enhancements include eastbound and westbound left-turn lanes at North and South Bowman Terrace, an eastbound right-turn lane at Big Bethel Road, and a westbound left-turn lane at Heavens Way. The project also includes adding paved shoulders and a multi-use path. The project, which received $2.4 million in SMART SCALE funding, is scheduled to begin construction in 2028.

2040 Vision Plan

Due to fiscal-constraint requirements, not all of the approximately 190 candidate transportation projects could be incorporated into the 2040 LRTP. The remaining candidate projects that were not included in the fiscally-constrained LRTP became part of the Hampton Roads Regional Transportation Vision Plan, an illustrative list of beneficial transportation projects. These unfunded projects warrant future consideration for inclusion in an amended 2040 LRTP or future LRTPs should additional funding be identified.

There are a number of projects in the Historic Triangle that are included in the 2040 Vision Plan. These projects are shown in **Figure 48**. In addition, these projects are shown in **Map 20** on page 88. Details on a few key projects are included below.

Denbigh Boulevard

Denbigh Boulevard (Route 173) is a two-lane, east-west arterial that connects George Washington Memorial Highway (US Route 17) with the City of Newport News. A four-lane divided highway through most of Newport News, Denbigh Boulevard narrows to a two-lane facility in York County.

Denbigh Boulevard currently carries nearly 17,000 vehicles per weekday in York County. By 2040, volumes are projected to grow to 24,000 vehicles per weekday. Although currently operating at low to moderate congestion levels during both the AM and PM Peak Periods, Denbigh Boulevard is expected to be severely congested in the PM Peak Period by 2040.

Widening Denbigh Boulevard to four lanes through York County was submitted for consideration in the 2040 LRTP Project Prioritization Process but was not included in the fiscally-constrained plan. The project received a score of 85 in the 2040 LRTP Project Prioritization Process, ranking lower than the I-64 and all three George Washington Memorial Highway projects in the Vision Plan list. The cost of widening Denbigh Boulevard from the Newport News City Line to George Washington Memorial Highway is expected to be $22 million (in year of expenditure dollars).

JAMES CITY COUNTY

2040 Project ID	Project	Project Cost (Year of Expenditure)
2040-77[1]	I-64 - Widen to 8-Lanes	$2,758,000,000
2040-78[1 2]	Mooretown Road between Lightfoot Rd and Croaker Rd - New Facility	$154,000,000
2040-82[1 3]	Route 60 between Newport News CL and Green Mount Pkwy - New Facility	$59,000,000
2040-57	Route 199 at Colonial Pkwy - Bridge Replacement	$14,000,000

WILLIAMSBURG

2040 Project ID	Project	Project Cost (Year of Expenditure)
2040-190[4]	Ironbound Rd between DePue Dr and Richmond Rd - Widening to 3 lanes	$9,000,000

YORK COUNTY

2040 Project ID	Project	Project Cost (Year of Expenditure)
2040-194	Commonwealth Drive Ext between Commonwealth Dr and Route 17 - New Facility	$11,000,000
2040-195[1]	Denbigh Boulevard between Newport News CL and Route 17 - Widen to 4 lanes	$22,000,000
2040-198	GW Mem Hwy between Newport News CL and Hampton Hwy - Widen to 6 lanes	$201,000,000
2040-197	GW Mem Hwy between Fort Eustis Blvd and Coleman Bridge - Widen to 6 lanes	$192,000,000
2040-196	GW Mem Hwy between Denbigh Blvd and Fort Eustis Blvd - Widen to 6 lanes	$80,000,000
2040-77[1]	I-64 - Widen to 8-Lanes	$2,758,000,000
2040-78[1 2]	Mooretown Road between Lightfoot Rd and Croaker Rd - New Facility	$154,000,000

FIGURE 48 – ROADWAY IMPROVEMENTS IN THE HISTORIC TRIANGLE INCLUDED IN THE 2040 VISION PLAN

Data source: HRTPO. Data does not include projects that solely include active transportation or transit improvements.
1 – Multi-jurisdictional project
2 – Refer to County Comprehensive Plans regarding expectations for future funding for this project.
3 – This project may be withdrawn prior to future plans.
4 – Funding for this project is included in the current Six-Year Improvement Program.

George Washington Memorial Highway (Route 17)

George Washington Memorial Highway (Route 17) is the busiest arterial corridor in the Historic Triangle, carrying between 34,000 and 49,000 vehicles per weekday. By 2040, volumes are expected to grow to between 48,000 and 86,000 vehicles per weekday throughout the corridor.

Congestion is prevalent on George Washington Memorial Highway throughout York County. During the AM Peak Period, travel is severely congested in the southbound direction between Goosley Road (Route 238) and Denbigh Boulevard (Route 173) and between Victory Boulevard (Route 171) and the Newport News City Line. During the PM Peak Period, the northbound direction is severely congested between the Newport News City Line and Victory Boulevard and between Denbigh Boulevard and Goosley Road. By 2040, nearly the entire corridor between the Newport News City Line and the Coleman Bridge is expected to be severely congested during the PM Peak Period.

Projects have been proposed that would widen George Washington Memorial Highway from 4 to 6 lanes throughout York County between the Newport News City Line and the Coleman Bridge. A section of this corridor – Hampton Highway to Wolf Trap Road – was widened to 6 lanes. Construction on this section was completed in 2016. The adjacent section between Wolf Trap Road and Denbigh Boulevard/Goodwin Neck Road is included in the 2040 LRTP and the current SYIP. Construction on this section of George Washington Memorial Highway is currently scheduled to begin in late 2025.

Widening the remaining sections of the corridor was submitted for consideration in the 2040 LRTP Project Prioritization Process but was not included in the fiscally-constrained plan. The segment between the Newport News City Line and Hampton Highway received a score of 137 in the 2040 LRTP Project Prioritization Process, the segment between Fort Eustis Boulevard and the Coleman Bridge received a score of 124, and the segment between Denbigh Boulevard and Fort Eustis Boulevard received a score of 113. By comparison, the section between Wolf Trap Road and Denbigh Boulevard, which was included in the 2040 fiscally-constrained LRTP, received a score of 145.

The cost of widening George Washington Memorial Highway from 4 to 6 lanes between the Newport News City Line and Hampton Highway is expected to be $201 million (in year of expenditure dollars), and the section between Denbigh Boulevard and the Coleman Bridge is expected to be $272 million (in year of expenditure dollars).

Interstate 64

I-64 is the primary gateway to the Hampton Roads region. As the only limited-access facility connecting Hampton Roads, I-64 is critical for providing access to and from the region for residents, tourists, the military, and freight movement. I-64 also serves as an evacuation route during emergencies and the eastbound lanes can be reversed for contraflow operation. Average weekday volumes on I-64 in the Historic Triangle span from 50,800 vehicles per weekday at the James City/New Kent County Line to 84,000 vehicles per weekday at the James City/Newport News Line. By 2040, these volumes are expected to grow to 82,000-123,000 vehicles per day in the Historic Triangle.

Weekend volumes, particularly during the summer tourist season, are high on I-64. Saturday volumes on I-64 near Camp Peary average nearly 86,000 vehicles per day during the summer, outpacing summer weekday volumes by 26% at the same location.

Widening is underway on a large section of I-64 on the Peninsula. Just south of the Historic Triangle, a 5.6-mile section of I-64 was widened from 4 to 6 lanes from Denbigh Boulevard to just south of Yorktown Road. This project, which is referred to as Segment I of the I-64 Peninsula Widening project, was completed in December 2017.

Within the Historic Triangle, Segment II of the I-64 Peninsula Widening project was completed in mid-2019. This 7.1-mile, $176 million project widened I-64 from 4 to 6 lanes between the end of Segment I near Yorktown Road and one mile west of Route 199 at Marquis Center Parkway (Exit 242).

Segment III of the I-64 Peninsula Widening project will widen I-64 from 4 to 6 lanes from the end of Segment II to 1.25 miles west of Route 199 at Lightfoot (Exit 234). Construction on this 8.4-mile, $244 million project is underway and is expected to be completed in 2021.

I-64 Widening – Segment III at Queens Creek Bridge

Although outside of the Historic Triangle, improvements to the interchange of I-64 at Fort Eustis Boulevard are included in the fiscally-constrained LRTP. This project would realign the interchange to improve congestion and safety. Construction on this project is currently scheduled for the late 2030s at a cost of $320 million (in year of expenditure).

The majority of the funding for the I-64 Peninsula Widening project was allocated from the Hampton Roads Transportation Fund (HRTF) by the Hampton Roads Transportation Accountability Commission (HRTAC). These funds are collected largely through regional fuel taxes and sales taxes.

No funding is currently allocated for widening the remainder of I-64 between the western end of Segment III and the Hampton Roads boundary at the James City/New Kent County Line, nor is the project included for construction in the fiscally-constrained LRTP. A project that would widen I-64 to eight lanes from Denbigh Boulevard to the James City/New Kent County Line was submitted for the 2040 Project Prioritization Process. Although the project scored high – 204 points – in the Project Prioritization Process, the $2.8 billion (year of expenditure) in funding needed for this project was not available in the fiscally-constrained LRTP.

Mooretown Road

This project involves constructing an approximately 3-mile extension of Mooretown Road between its northern terminus at Lightfoot Road and the intersection of Croaker Road and Rochambeau Drive. The northern section of the corridor is located in James City County while the southern portion is located in York County. Expected benefits of this project include providing an alternative to Richmond Road (US Route 60), providing an additional corridor for emergency situations and evacuations, and improving access to the area between the Croaker and Lightfoot interchanges for economic opportunities.

A study was completed in 2016 to determine the design characteristics, preferred roadway alignment, and costs associated with this project. This study – the Mooretown Road Extension Corridor Study – was funded via Regional Surface Transportation Program (RSTP) funds allocated by the HRTPO.

The study includes a forecast of volumes in the year 2040 for the Mooretown Road Extension. The volumes range from 18,600 vehicles per day in the central section of the corridor to 25,500 vehicle per day at the northern end near Croaker Road. Based on these volumes the study recommends constructing a four-lane divided roadway with a raised median throughout the corridor.

Three alternative roadway alignments were examined as part of this study. The alignments of each alternative are shown in **Figure 49**. The projected cost of each of the three alternatives, assuming a four-lane divided roadway with a raised median, is between $64-67 million.

The Mooretown Road Extension Corridor Study was adopted by James City County Board of Supervisors in December 2015 without recommending a preferred alternative.

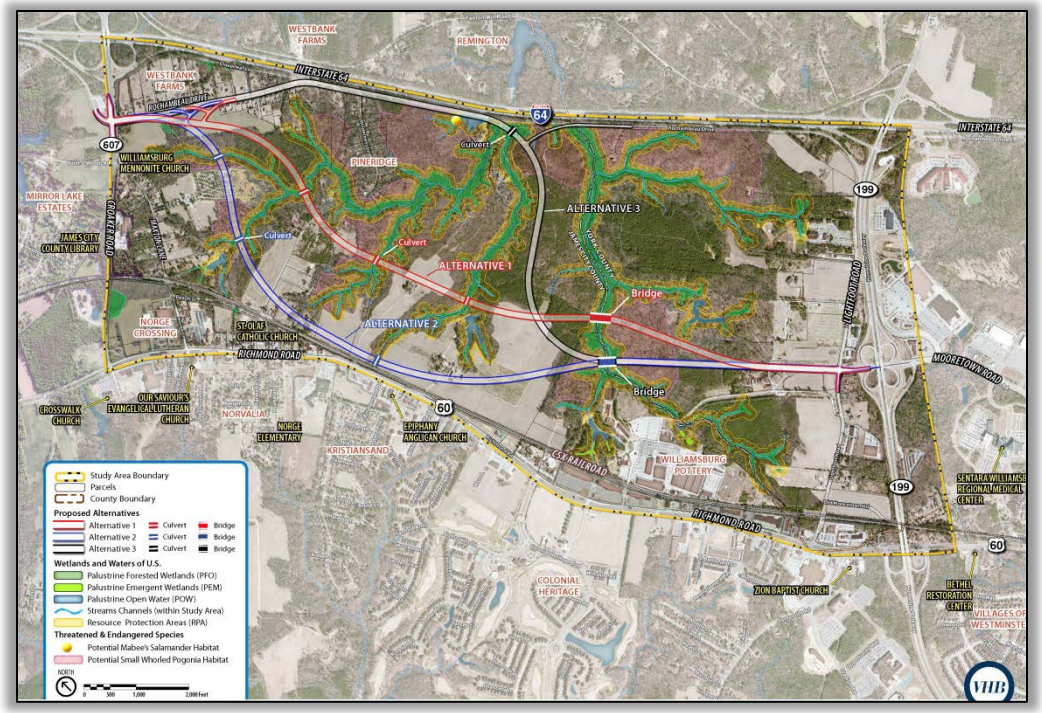
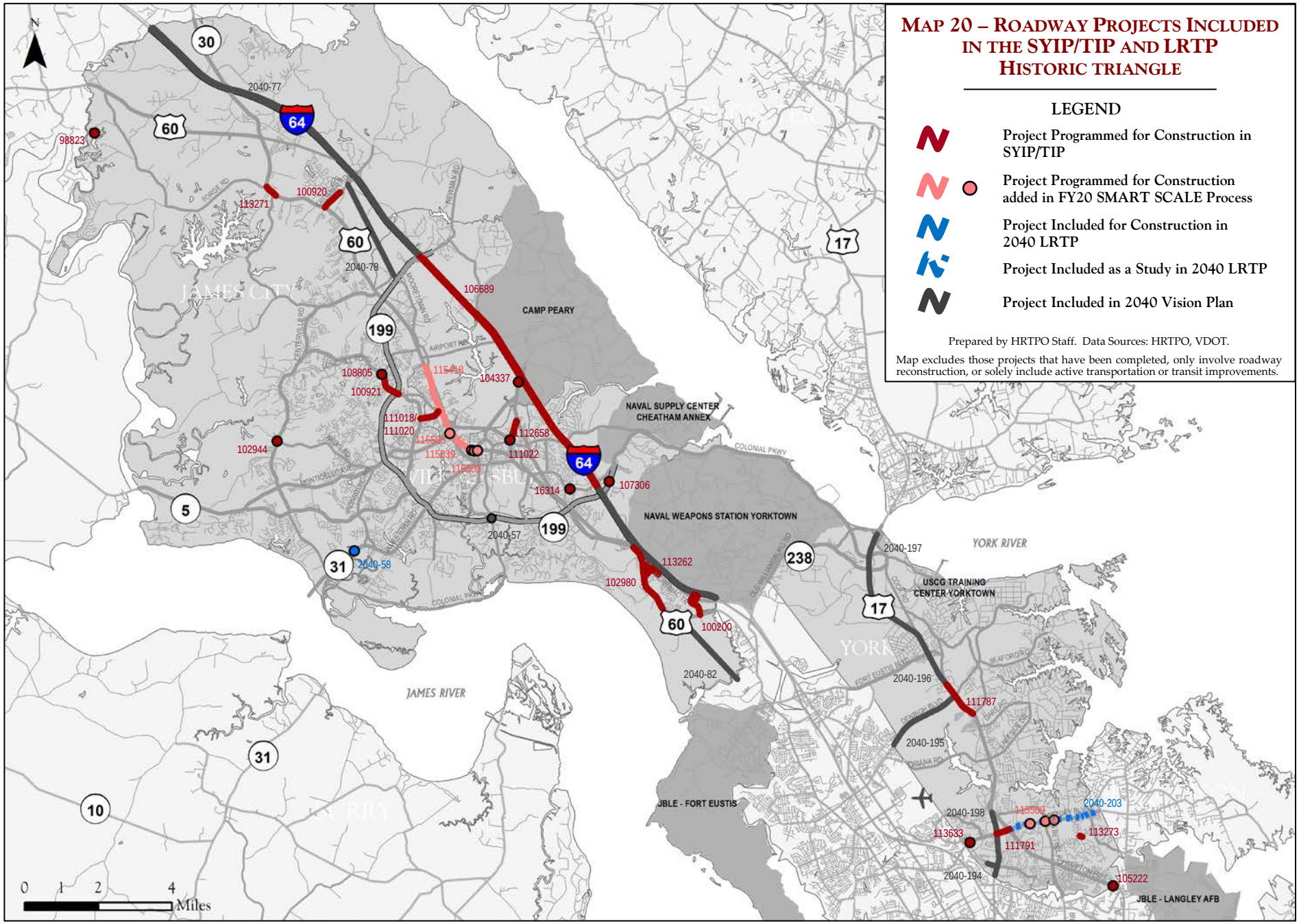


FIGURE 49 – MOORETOWN ROAD EXTENSION ALTERNATIVE ROADWAY ALIGNMENTS

Source: Mooretown Road Extension Corridor Study.

The Mooretown Road Extension project was submitted for consideration in the 2040 LRTP Project Prioritization Process but was not included in the fiscally-constrained plan. The project received a score of 75 in the 2040 LRTP Project Prioritization Process, ranking lower than most of the other Historic Triangle highway projects in the Vision Plan list.


MAP 20 – ROADWAY PROJECTS INCLUDED IN THE SYIP/TIP AND LRTP HISTORIC TRIANGLE
LEGEND
Project Programmed for Construction in SYIP/TIP
Project Programmed for Construction added in FY20 SMART SCALE Process
Project Included for Construction in 2040 LRTP
Project Included as a Study in 2040 LRTP
Project Included in 2040 Vision Plan
Prepared by HRTPO Staff. Data Sources: HRTPO, VDOT.
Map excludes those projects that have been completed, only involve roadway reconstruction, or solely include active transportation or transit improvements.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
2040-77
2040-78
2040-57
2040-58
2040-82
2040-195
2040-196
2040-197
2040-198
2040-203
2040-194
98823
100920
113271
106689
108805
100921
115418
104337
111018/
111020
115515
115839
115503
112658
111022
102944
16314
107306
113262
102980
100200
111787
115509
113633
113273
111791
105222
0 1 2 4 Miles

2040 Traffic Characteristics

As part of long-range transportation planning efforts, HRTPO staff forecasts 20-year horizon daily traffic volumes on the Congestion Management Process roadway network. These forecasted volumes are based on output from the regional travel demand model, which estimates raw traffic volumes based on socioeconomic projections and the 2040 regional roadway network, with the assumption that all of the fiscally-constrained projects included in the LRTP are constructed. However, roadways that are included as Studies in the LRTP or are included in the Vision Plan are not incorporated into the regional model's analysis.

HRTPO staff used these forecasted 2040 daily traffic volumes to estimate peak period congestion levels on the CMP roadway network. The methodology used to determine these future congestion levels is largely similar to the methodology described in the Current Conditions - Roadway Congestion section of this report for those roadways without speed data.

Figure 52 on pages 93-96 shows the current and forecasted 2040 LRTP weekday traffic volumes and PM Peak Period congestion levels for CMP roadway segments in the Historic Triangle. **Map 21** on page 91 shows the forecasted 2040 weekday traffic volumes, and **Map 22** on page 92 shows the projected 2040 PM Peak Period congestion levels.

The amount of vehicular travel is projected to grow significantly throughout the Historic Triangle. In 2017, there were a total of 3,800,000 vehicle-miles of travel (VMT) that occurred each weekday on CMP roadways in the Historic Triangle. By 2040, HRTPO forecasts that the VMT on the CMP network will increase 57%, up to nearly 6,000,000 each weekday. On a locality level, VMT is projected to increase 55% in James City County, 54% in Williamsburg, and 60% in York County between 2017 and 2040.

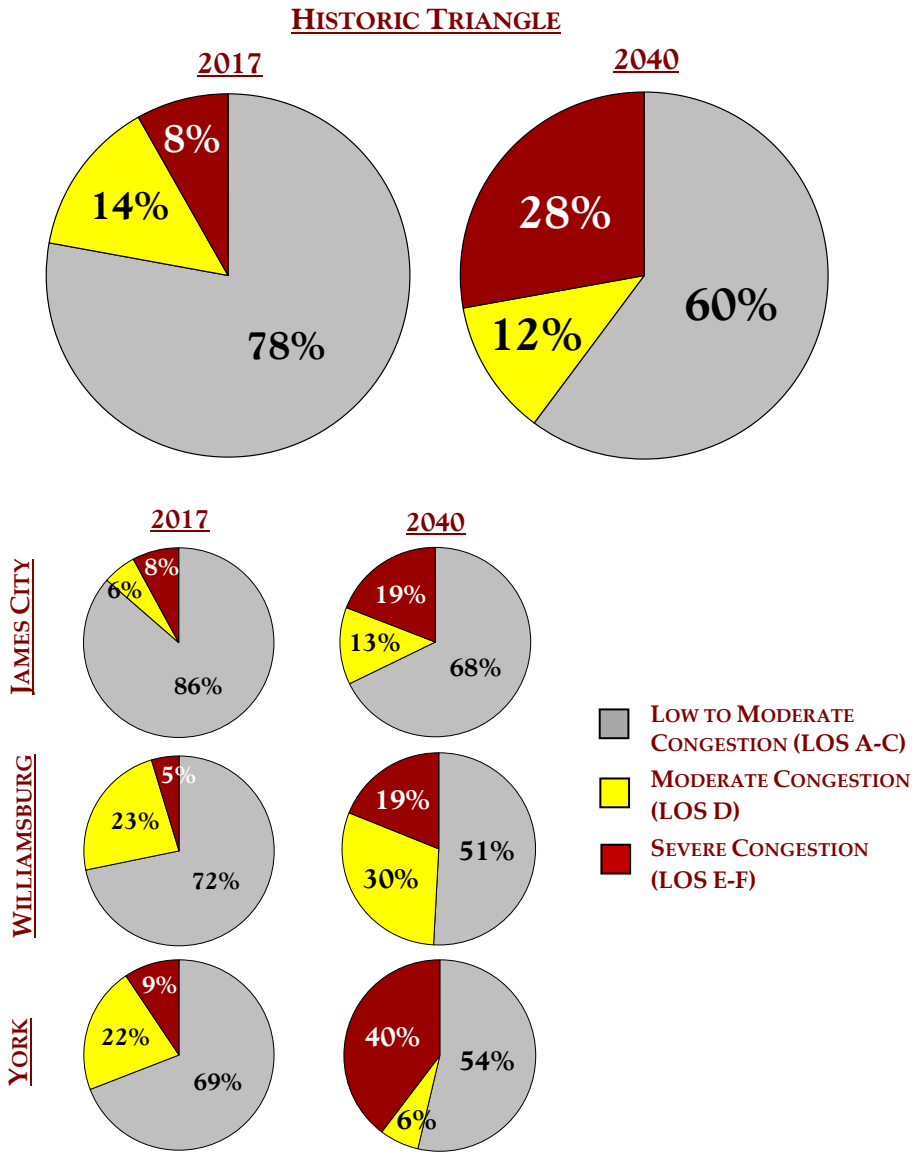


FIGURE 50 – 2017 AND 2040 PM PEAK PERIOD CONGESTION LEVELS BY LANE-MILE IN THE HISTORIC TRIANGLE

Source: HRTPO. Only includes those roadways in the regional CMP roadway network.

Peak period roadway congestion levels in the Historic Triangle are expected to increase as the amount of vehicular travel grows. In 2017, 8% of the lane-miles on the Historic Triangle's CMP roadway network were severely congested during the PM Peak Period. By 2040, the percentage of severely congested lane-miles is projected to increase up to 28% (**Figure 50** on page 89). This growth in peak period congestion is expected to occur throughout the Historic Triangle, with the number of severely congested lane-miles projected to grow to 19% of the CMP roadway network in James City County, 19% in Williamsburg, and 40% in York County.

Major roadways in the Historic Triangle that are expected to operate in severely congested conditions in 2040 include I-64 between Route 30 and Route 199/646, Route 199 to the south of Williamsburg between John Tyler Highway (Route 5) and Pocahontas Trail (US Route 60), portions of Monticello Avenue in James City County and Williamsburg, and most of George Washington Memorial Highway, Hampton Highway and Victory Boulevard in York County.

2045 LRTP Candidate Projects

HRTPO has initiated work for the Hampton Roads 2045 Long-Range Transportation Plan. In 2019, HRTPO staff requested that localities and agencies submit candidate projects for consideration in the plan. In addition to these stakeholders, the public was also provided an opportunity to submit candidate projects. Overall, 21 new projects were submitted for Historic Triangle localities, which were added to the two projects that are included but have not been committed for construction in the 2040 Hampton Roads Long-Range Transportation Plan and the eight projects that are included in the Hampton Roads Regional Transportation Vision Plan (**Figure 51**). HRTPO staff has received over 400 proposed projects throughout the region to be considered in the 2045 LRTP.

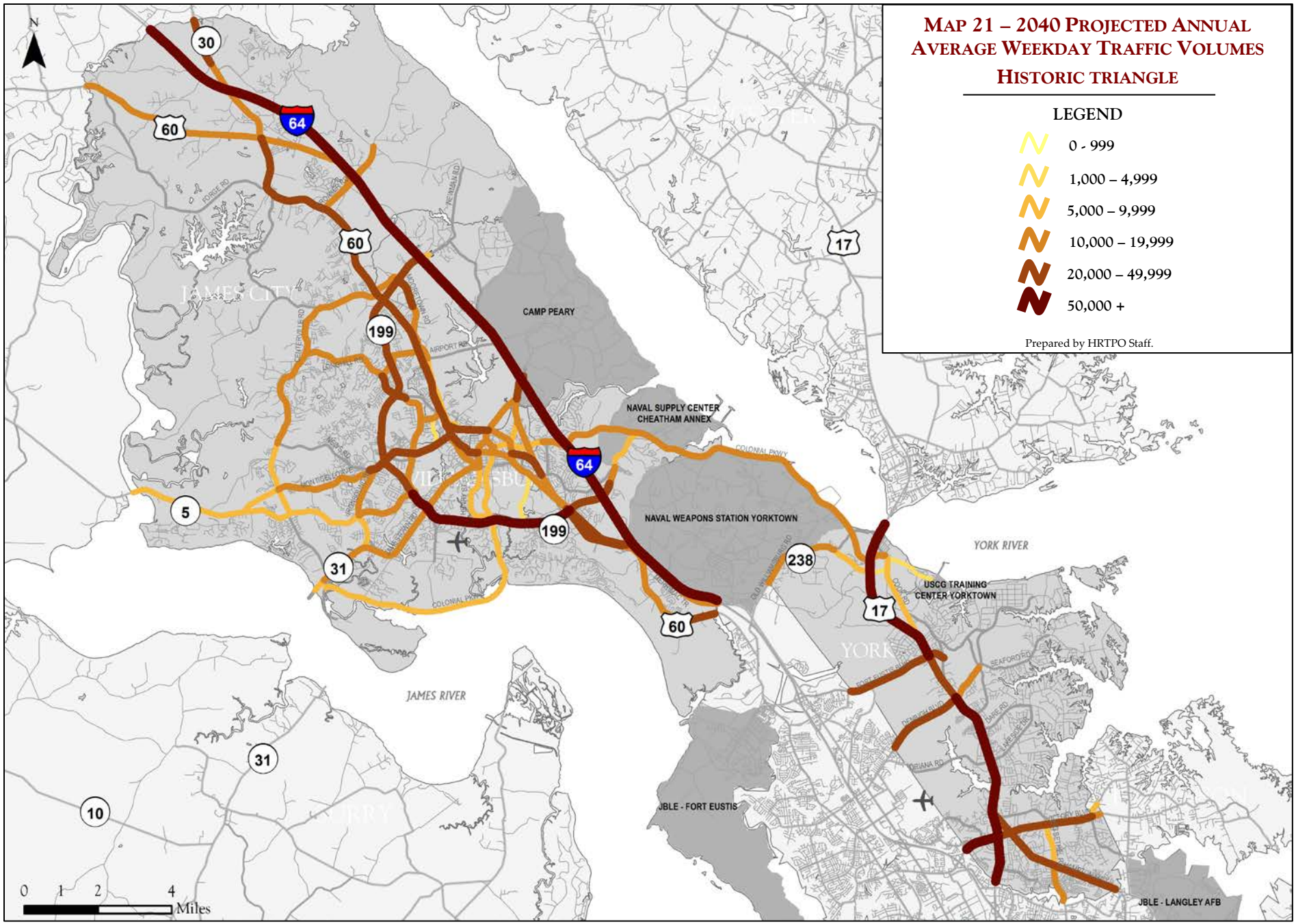
These projects – excluding those that are inconsistent with Locality Comprehensive Plans and those that do not need to be listed individually in the LRTP (such as roadway reconstruction or intersection improvement projects) – will be scored through the LRTP Project Prioritization Process, which was described previously in this report. Draft scores for each project will be prepared in 2020, and the Hampton Roads 2045 LRTP will be approved by the HRTPO Policy Board in 2021.

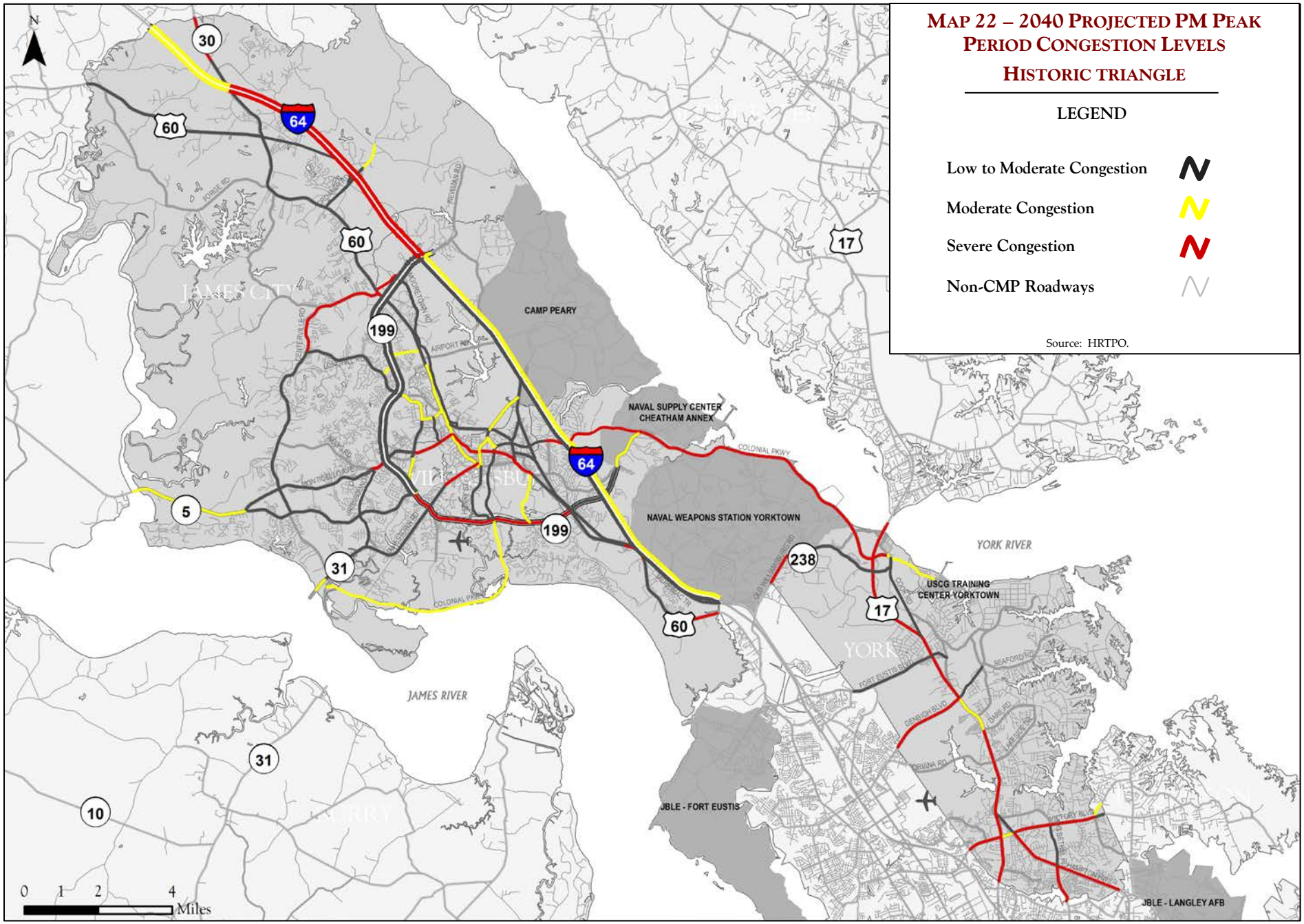
Locality	Candidate Project	Submittal Source
James City	Centerville Road from Richmond Road to Longhill Road - Widening	County
James City	Jamestown Road (Rte 31) Over Powhatan Creek - Bridge Replacement	2040 LRTP
James City	Lightfoot Road/Richmond Road - Intersection Improvements1	County
James City	Route 199 at Colonial Parkway - Bridge Replacement	Vision Plan
James City	Route 199/Mounts Bay Road - Intersection Improvements1	County
Multi	Airport Road/Richmond Road/Mooretown Road - Intersection Improvements1	County
Multi	Birthplace of America Trail (expand the Virginia Capital Trail)	Public
Multi	GW Mem Highway from Newport News CL to Hampton Highway - Widening	Vision Plan
Multi	I-64 Peninsula Segment 4 - Widening	VDOT
Multi	I-64 - Widen to 8-Lanes	Vision Plan
Multi	James River - New Fixed Crossing	Public
Multi	Light Rail Expansion - Peninsula	Public
Multi	Mooretown Road from Lightfoot Road to Croaker Road - New Facility	Vision Plan
Multi	Route 60 from Newport News CL to Green Mount Parkway - New Facility	Vision Plan
Multi	Route 199 from Richmond Road to Pocahontas Trail - Widening	Public
Williamsburg	Capitol Landing Road from Bypass Road to Merrimac Trail - Corridor Improvements[1]	City
Williamsburg	Carter's Grove Country Road - Conversion to Shared Use Path	City
Williamsburg	Ironbound Rd from DePue Dr to Richmond Rd - Widening to 3 lanes	Vision Plan
Williamsburg	Monticello Avenue/Compton Drive/Treyburn Drive - Intersection Improvements[1]	City
Williamsburg	Page Street from Second Street to Capitol Landing Road - Roadway Reconstruction[1]	City
Williamsburg	Parkway Drive/Second Street - Intersection Improvements[1]	City
Williamsburg	Richmond Road/Waltz Farm Drive - Intersection Improvements[1]	City
Williamsburg	Route 132/Route 132Y - Intersection Improvements[1]	City
Williamsburg	Strawberry Plains Road from Ironbound Road to John Tyler Highway - Shared Use Patl	City
Williamsburg	York Street/Quarterpath Road - Intersection Improvements[1]	City
York	Commonwealth Drive Extension - Commonwealth Drive to GW Mem Highway	Vision Plan
York	Denbigh Boulevard from Newport News CL to Route 17 - Widening	Vision Plan
York	GW Mem Highway from Fort Eustis Boulevard to Coleman Bridge - Widening	Vision Plan
York	GW Mem Highway from Denbigh Boulevard to Fort Eustis Boulevard - Widening	Vision Plan
York	I-64 Westbound at Route 199 (Exit 242) - Interchange Improvements	Public
York	Victory Boulevard from Big Bethel Road to Carys Chapel Road - Shared Use Path	County
York	Victory Boulevard from Hampton Highway to the Poquoson CL - Widening	2040 LRTP
York	York County Trail	Public

FIGURE 51 – CANDIDATE PROJECTS IN THE HISTORIC TRIANGLE SUBMITTED FOR THE HAMPTON ROADS 2045 LRTP

Source: HRTPO.

1 - Smaller scale projects that do not need to be listed individually in the LRTP (such as projects that only involve roadway reconstruction or intersection improvements) are deemed to be consistent with the LRTP and will not need to be scored in the Project Prioritization Process.


MAP 21 – 2040 PROJECTED ANNUAL AVERAGE WEEKDAY TRAFFIC VOLUMES
HISTORIC TRIANGLE
LEGEND
0 - 999
1,000 – 4,999
5,000 – 9,999
10,000 – 19,999
20,000 – 49,999
50,000 +
Prepared by HRTPO Staff.
N
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
JAMES CITY
YORK
COLONIAL PKWY
AIRPORT RD
0 1 2 4
Miles


MAP 22 – 2040 PROJECTED PM PEAK PERIOD CONGESTION LEVELS
HISTORIC TRIANGLE
LEGEND
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
N
30
60
64
17
199
5
31
10
238
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
YORK RIVER
USCG TRAINING CENTER YORKTOWN
JAMES RIVER
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES CITY
YORK
0 1 2 4 Miles

JAMES CITY COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume		PM Peak Period Congestion Level Existing		
				Existing	2040	NB/EB	SB/WB	2040
30	Barhamsville Rd	I-64	US 60 - Richmond Rd	10,250	18,000	LOW	LOW	LOW
614	Centerville Rd	SR 5 - John Tyler Hwy	Rte 5000 - Monticello Ave	5,099	5,000	LOW		LOW
614	Centerville Rd	Rte 5000 - Monticello Ave	Rte 613 - News Road	5,099	7,000	LOW		LOW
614	Centerville Rd	Rte 613 - News Road	Rte 612 - Longhill Rd	9,547	14,000	LOW		LOW
614	Centerville Rd	Rte 612 - Longhill Rd	US 60 - Richmond Rd	10,837	12,000	SEV		SEV
-	Colonial Pkwy	Jamestown Visitor Center	Williamsburg CL	2,118	8,000	LOW		MOD
607	Croaker Rd	US 60 - Richmond Rd	Rte 760 - Maxton Ln	9,802	13,000	MOD		LOW
607	Croaker Rd	Rte 760 - Maxton Ln	I-64	9,391	14,000	LOW		LOW
607	Croaker Rd	I-64	Rte 602 - Fenton Mill Rd	5,471	14,000	LOW		LOW
607	Croaker Rd	Rte 602 - Fenton Mill Rd	Rte 606 - Riverview Rd	3,165	10,000	LOW		MOD
615	Depue Dr	Rte 615 - Ironbound Rd	Rte 612 - Longhill Rd	11,039	15,000	LOW		MOD
64	I-64	New Kent CL	SR 30 - Old Stage Rd	50,803	82,000	LOW	LOW	MOD
64	I-64	SR 30 - Old Stage Rd	Rte 607 - Croaker Rd	57,238	99,000	LOW	LOW	SEV
64	I-64	Rte 607 - Croaker Rd	York CL	64,620	103,000	LOW	LOW	SEV
64	I-64	York CL	SR 143 Merrimac Trail/NN CL	84,322	123,000	MOD	MOD	LOW
615	Ironbound Rd/Sandy Bay Rd	SR 31 - Jamestown Rd	SR 5 - John Tyler Hwy	10,801	8,000	LOW	LOW	LOW
615	Ironbound Rd/News Rd	SR 5 - John Tyler Hwy	SR 321 - Monticello Ave	9,144	13,000	LOW	LOW	LOW
615	Ironbound Rd	Rte 616 - Strawberry Plains Rd	SR 321 - Monticello Ave	10,867	12,000	LOW		LOW
615	Ironbound Rd	SR 321 - Monticello Ave	Williamsburg CL	12,269	13,000	LOW		LOW
31	Jamestown Rd	Jamestown Ferry	Rte 614 - Greensprings Rd	7,315	8,000	MOD		MOD
31	Jamestown Rd	Rte 614 - Greensprings Rd	Rte 681 - Sandy Bay Rd	7,315	10,000	LOW	LOW	LOW
31	Jamestown Rd	Rte 681 - Sandy Bay Rd	Rte 682 - Neck-O-Land Rd	9,139	12,000	LOW	LOW	LOW
31	Jamestown Rd	Rte 682 - Neck-O-Land Rd	Williamsburg CL	9,139	12,000	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Charles City CL	Rte 5000 - Monticello Ave	4,456	6,000	LOW	LOW	MOD
5	John Tyler Memorial Hwy	Rte 5000 - Monticello Ave	Rte 614 - Centerville Rd	8,099	5,000	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Rte 614 - Centerville Rd	Rte 615 - Ironbound Rd	8,099	9,000	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Rte 615 - Ironbound Rd	Rte 652 - Stanley Dr	11,078	13,000	LOW	LOW	LOW
5	John Tyler Memorial Hwy	Rte 652 - Stanley Dr	SR 199	18,245	19,000	LOW	LOW	LOW
612	Longhill Rd	Rte 614 - Centerville Rd	Rte 658 - Olde Towne Rd	7,943	11,000	LOW		LOW
612	Longhill Rd	Rte 658 - Olde Towne Rd	SR 199	16,878	22,000	SEV		LOW
612	Longhill Rd	SR 199	Rte 615 - Depue Dr	16,878	25,000	LOW		MOD
143	Merrimac Trail	Newport News CL	York CL (South of Busch Gardens)	11,600	17,000	LOW	LOW	LOW
143	Merrimac Trail	SR 199/York CL	Rte 641 - Penniman Rd/York CL	16,458	19,000	LOW	LOW	LOW
5000	Monticello Ave	SR 5 - John Tyler Hwy	Rte 614 - Centerville Rd	12,433	5,000	MOD		LOW
5000	Monticello Ave	Rte 614 - Centerville Rd	Rte 613 - News Road	12,433	12,000	LOW		LOW
5000	Monticello Ave	Rte 613 - News Road	SR 199	38,707	44,000	SEV		SEV
321	Monticello Ave	SR 199	Rte 615 - Ironbound Rd	34,428	26,000	SEV		LOW
30	Old Stage Hwy	New Kent CL	Rte 601 - Barnes Rd	10,220	21,000	LOW	LOW	SEV
30	Old Stage Hwy	Rte 601 - Barnes Rd	I-64	10,220	19,000	LOW	LOW	LOW
658	Olde Towne Rd	Rte 612 - Longhill Rd	US 60 - Richmond Rd	7,957	11,000	LOW		MOD
60	Pocahontas Trail	Williamsburg CL	SR 199/York CL	9,053	16,000	LOW	LOW	LOW
60	Pocahontas Trail	York CL	BASF Rd	10,247	18,000	LOW	LOW	LOW
60	Pocahontas Trail	BASF Rd	Newport News CL	10,247	21,000	LOW	LOW	SEV
60	Richmond Rd	New Kent CL	SR 30 - Barhamsville Rd	5,795	11,000	LOW	LOW	LOW
60	Richmond Rd	SR 30 - Barhamsville Rd	Rte 607 - Croaker Rd	15,041	22,000	LOW	LOW	LOW
60	Richmond Rd	Rte 607 - Croaker Rd	Rte 646 - Lightfoot Rd	21,746	33,000	LOW	LOW	LOW
60	Richmond Rd	Rte 646 - Lightfoot Rd	Rte 614 - Centerville Rd	21,746	40,000	LOW	LOW	SEV
60	Richmond Rd	Rte 614 - Centerville Rd	SR 199	23,128	44,000	SEV	SEV	SEV
60	Richmond Rd	SR 199	Rte 658 - Olde Towne Rd	12,870	24,000	LOW	LOW	LOW
60	Richmond Rd	Rte 658 - Olde Towne Rd	Williamsburg CL	22,330	28,000	LOW	LOW	LOW

FIGURE 52 – CURRENT AND 2040 LRTP WEEKDAY TRAFFIC VOLUMES AND PM PEAK PERIOD CONGESTION LEVELS

Data sources: VDOT, HRTPO.

JAMES CITY COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume		PM Peak Period Congestion Level		
						Existing		
				Existing	2040	NB/EB	SB/WB	2040
30	Rochambeau Dr	US 60 - Richmond Rd	0.7 mi east of Ashington Way	9,135	12,000	LOW	LOW	LOW
30	Rochambeau Dr	0.7 mi east of Ashington Way	Rte 607 - Croaker Rd	9,135	12,000	LOW	LOW	SEV
-	Skiffes Creek Connector	Pocahontas Trail	Merrimac Trail	-	10,000	-	-	LOW
199	SR 199	US 60 - Richmond Rd/York CL	Rte 612 - Longhill Rd	25,732	46,000	LOW	LOW	LOW
199	SR 199	Rte 612 - Longhill Rd	SR 321 - Monticello Ave	30,029	45,000	LOW	LOW	LOW
199	SR 199	SR 321 - Monticello Ave	SR 5 - John Tyler Hwy	28,865	40,000	MOD	LOW	LOW
199	SR 199	SR 5 - John Tyler Hwy	Williamsburg CL	36,257	52,000	SEV	SEV	SEV
199	SR 199	Williamsburg CL	SR 132 - Henry St	33,813	56,000	LOW	SEV	SEV
199	SR 199	SR 132 - Henry St	Mounts Bay Rd	34,512	65,000	LOW	SEV	SEV
199	SR 199	Mounts Bay Rd	US 60 - Pocahontas Tr./York CL	32,267	65,000	LOW	SEV	SEV
616	Strawberry Plains Rd	SR 5 - John Tyler Hwy	Rte 615 - Ironbound Rd	9,813	11,000	LOW		MOD

WILLIAMSBURG

Route Num	Location	Segment From	Segment To	Weekday Volume		PM Peak Period Congestion Level		
						Existing		
				Existing	2040	NB/EB	SB/WB	2040
5	Boundary St	Jamestown Rd	Francis St	9,366	14,000	MOD		MOD
60	Bypass Rd	Richmond Rd	York CL	26,368	29,000	MOD	MOD	LOW
60	Bypass Rd	SR 132 - Henry St	SR 5 - Capitol Landing Rd	14,772	17,000	LOW	LOW	LOW
5	Capitol Landing Rd	US 60 - Bypass Rd	SR 143 - Merrimac Trail	7,406	8,000	LOW		LOW
-	Colonial Pkwy	James City CL	York CL	2,919	9,000	LOW		LOW
5	Francis St	Boundary St	SR 132 - Henry St	6,890	8,000	LOW	LOW	MOD
132	Henry St	SR 199	Francis St	3,071	9,000	LOW	LOW	LOW
5	Henry St	Francis St	SR 5 - Lafayette St	5,451	11,000	MOD	MOD	MOD
132	Henry St	SR 5 - Lafayette St	SR 132 Y	5,999	15,000	LOW	LOW	MOD
7081	Ironbound Rd	James City CL	Depue Dr	12,269	13,000	LOW		LOW
7081	Ironbound Rd	Depue Dr	Longhill Rd	9,898	11,000	MOD		MOD
7081	Ironbound Rd	Longhill Rd	Richmond Rd	12,334	17,000	LOW		MOD
31	Jamestown Rd	Williamsburg CL	SR 199	16,665	21,000	LOW	LOW	LOW
5	Jamestown Rd	SR 199	John Tyler Hwy	9,100	10,000	LOW	SEV	LOW
5	Jamestown Rd	John Tyler Hwy	College Creek	9,630	11,000	LOW	LOW	LOW
5	Jamestown Rd	College Creek	Boundary St	9,630	11,000	LOW	LOW	SEV
7077	Lafayette St	Richmond Rd	SR 132 - Henry St	10,268	21,000	MOD		SEV
5	Lafayette St	SR 132 - Henry St	Capital Landing Rd	10,361	18,000	MOD		SEV
5	Lafayette St	Capital Landing Rd	US 60 - Page St	8,494	15,000	MOD		SEV
143	Merrimac Trail	York CL (South)	SR 5 - Capital Landing Rd	7,029	15,000	LOW	SEV	LOW
143	Merrimac Trail	SR 5 - Capital Landing Rd	York CL (North)	9,898	17,000	LOW	LOW	LOW
321	Monticello Ave	Rte 615 - Ironbound Rd	Richmond Rd	15,922	20,000	MOD		SEV
60	Page St	SR 5 - Capitol Landing Rd	Second St	14,589	17,000	LOW	LOW	LOW
60	Page St	Second St	Lafayette St	14,717	16,000	LOW	LOW	LOW
-	Quarterpath Rd	SR 199	US 60 - York St	1,218	4,000	LOW		MOD
60	Richmond Rd	James City CL	Ironbound Rd	22,330	28,000	LOW	LOW	MOD
60	Richmond Rd	Ironbound Rd	Bypass Rd	26,383	32,000	MOD	MOD	MOD
7075	Richmond Rd	Bypass Rd	Monticello Ave	20,981	26,000	MOD		MOD
7075	Richmond Rd	Monticello Ave	Brooks St	10,913	17,000	MOD		MOD
7075	Richmond Rd	Brooks St	Boundary St	10,913	17,000	MOD		MOD
132	SR 132	SR 132 Y	US 60 - Bypass Rd	9,112	18,000	LOW	LOW	LOW
132	SR 132 Y	Colonial Parkway	SR 132 - Henry St	5,861	16,000	LOW		MOD

FIGURE 52 (CONTINUED) – CURRENT AND 2040 LRTP WEEKDAY TRAFFIC VOLUMES AND PM PEAK PERIOD CONGESTION LEVELS

Data sources: VDOT, HRTPO.

WILLIAMSBURG

Route Num	Location	Segment From	Segment To	Weekday Volume		PM Peak Period Congestion Level		
						Existing		
				Existing	2040	NB/EB	SB/WB	2040
199	SR 199	James City CL (West)	SR 31 - Jamestown Rd	36,257	52,000	SEV	SEV	SEV
199	SR 199	SR 31 - Jamestown Rd	James City CL (East)	36,971	52,000	LOW	SEV	SEV
7079	Second St	Page St	York CL	14,652	23,000	LOW		LOW
-	Treyburn Dr	Monticello Ave	Ironbound Rd	3,000	4,000	LOW		LOW
60	York St	Lafayette St	James City CL	12,774	19,000	LOW	LOW	SEV

YORK COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume		PM Peak Period Congestion Level		
						Existing		
				Existing	2040	NB/EB	SB/WB	2040
1020	Ballard St	Colonial Pkwy	SR 238 - Cook Rd	6,866	7,000	MOD		MOD
238	Ballard St	SR 238 - Cook Rd	Coast Guard Training Center	2,776	3,000	MOD		MOD
600	Big Bethel Rd	Hampton CL	SR 134 - Hampton Hwy	9,210	15,000	MOD	LOW	SEV
600	Big Bethel Rd	SR 134 - Hampton Hwy	SR 171 - Victory Blvd	4,817	5,000	LOW	LOW	LOW
60	Bypass Rd	Williamsburg CL	Rte 713 - Waller Mill Rd	26,368	29,000	MOD	MOD	LOW
60	Bypass Rd	Rte 713 - Waller Mill Rd	SR 132	26,368	28,000	MOD	MOD	LOW
143	Capitol Landing Rd	Williamsburg CL	SR 132	9,523	10,000	LOW	LOW	LOW
143	Capitol Landing Rd	SR 132	I-64	19,146	30,000	LOW	LOW	LOW
-	Colonial Pkwy	Williamsburg CL	Ballard St	6,218	12,000	MOD		SEV
704	Cook Rd	US 17 - GW Mem Hwy	SR 238 - Goosley Rd	7,287	8,000	LOW		LOW
238	Cook Rd	SR 238 - Goosley Rd	Ballard St	8,102	9,000	LOW		LOW
173	Denbigh Blvd	Newport News CL	US 17 - GW Mem Hwy	16,861	24,000	LOW	LOW	SEV
782	E Yorktown Rd	SR 171 - Victory Blvd	Poquoson CL	5,705	7,000	LOW		MOD
105	Fort Eustis Blvd	Newport News CL	US 17 - GW Mem Hwy	18,504	26,000	LOW	LOW	LOW
1050	Fort Eustis Blvd Ext	US 17 - GW Mem Hwy	Rte 634 - Old York Hampton Hwy	3,462	20,000	LOW		LOW
17	George Washington Mem Hwy	Newport News CL	SR 171 - Victory Blvd	34,018	51,000	SEV	MOD	SEV
17	George Washington Mem Hwy	SR 171 - Victory Blvd	SR 134 - Hampton Hwy	36,740	63,000	LOW	SEV	SEV
17	George Washington Mem Hwy	SR 134 - Hampton Hwy	Rte 621 - Dare Rd	48,876	86,000	LOW	LOW	SEV
17	George Washington Mem Hwy	Rte 621 - Dare Rd	SR 173 - Denbigh Blvd	37,878	69,000	LOW	LOW	MOD
17	George Washington Mem Hwy	SR 173 - Denbigh Blvd	SR 105 - Fort Eustis Blvd	36,487	48,000	SEV	MOD	SEV
17	George Washington Mem Hwy	SR 105 - Fort Eustis Blvd	Rte 704 - Cook Rd	36,373	52,000	SEV	MOD	SEV
17	George Washington Mem Hwy	Rte 704 - Cook Rd	SR 238 - Goosley Rd	27,147	51,000	SEV	MOD	SEV
17	George Washington Mem Hwy	SR 238 - Goosley Rd	Gloucester CL	34,210	50,000	LOW	LOW	SEV
173	Goodwin Neck Rd	US 17 - GW Mem Hwy	Rte 630 - Wolf Trap Rd	9,970	10,000	LOW	SEV	LOW
238	Goosley Rd	SR 238 - Old Williamsburg Rd	Rte 637 - Crawford Rd	6,501	7,000	LOW		LOW
238	Goosley Rd	Rte 637 - Crawford Rd	US 17 - GW Mem Hwy	6,501	7,000	LOW		LOW
238	Goosley Rd	US 17 - GW Mem Hwy	Rte 704 - Cook Rd	1,558	4,000	LOW		LOW
134	Hampton Hwy	US 17 - GW Mem Hwy	SR 171 - Victory Blvd	16,657	35,000	LOW	SEV	LOW
134	Hampton Hwy	SR 171 - Victory Blvd	Rte 600 - Big Bethel Rd	24,453	48,000	SEV	LOW	SEV
134	Hampton Hwy	Rte 600 - Big Bethel Rd	Hampton CL	23,632	43,000	MOD	LOW	SEV
64	I-64	James City CL	SR 199/Rte 646 - Newman Rd	64,620	103,000	LOW	LOW	SEV
64	I-64	SR 199/Rte 646 - Newman Rd	SR 143 - Camp Peary Rd	60,262	108,000	LOW	LOW	LOW
64	I-64	SR 143 - Camp Peary Rd	SR 199	65,418	107,000	LOW	LOW	LOW
64	I-64	SR 199	Busch Gardens Interchange	81,291	112,000	LOW	LOW	LOW

FIGURE 52 (CONTINUED) – CURRENT AND 2040 LRTP WEEKDAY TRAFFIC VOLUMES AND PM PEAK PERIOD CONGESTION LEVELS

Data sources: VDOT, HRTPO.

YORK COUNTY

Route Num	Location	Segment From	Segment To	Weekday Volume		PM Peak Period Congestion Level Existing		
				Existing	2040	NB/EB	SB/WB	2040
64	I-64	Busch Gardens Interchange	James City CL	84,322	123,000	MOD	MOD	LOW
646	Lightfoot Rd	US 60 - Richmond Rd	Mooretown Rd	9,878	16,000	LOW		SEV
143	Merrimac Trail	James City CL	Busch Gardens Interchange	17,754	17,000	LOW	LOW	LOW
143	Merrimac Trail	Busch Gardens Interchange	SR 199/James City CL	17,754	21,000	LOW	LOW	LOW
143	Merrimac Trail	Penniman Rd	Second St	8,618	26,000	LOW	MOD	LOW
143	Merrimac Trail	Second St	Williamsburg CL	7,575	10,000	LOW	SEV	LOW
603	Mooretown Rd	Rte 713 - Waller Mill Rd	Rte 645 - Airport Rd	6,232	9,000	LOW		LOW
603	Mooretown Rd	Rte 645 - Airport Rd	Old Mooretown Rd	9,091	11,000	LOW		LOW
603	Mooretown Rd	Old Mooretown Rd	SR 199	20,000	23,000	LOW		LOW
603	Mooretown Rd	SR 199	Rte 646 - Lightfoot Rd	10,000	16,000	LOW		LOW
646	Newman Rd	I-64	Rte 602 - Fenton Mill Rd	2,880	6,000	LOW		MOD
238	Old Williamsburg Rd	Newport News CL	Rte 660 - Baptist Rd	9,533	14,000	LOW		SEV
238	Old Williamsburg Rd	Rte 660 - Baptist Rd	SR 238 - Goosley Rd	9,381	11,000	LOW		LOW
641	Penniman Rd	SR 199	Colonial Pkwy	6,395	8,000	LOW	LOW	MOD
60	Pocahontas Trail	SR 199/James City CL	Kingsmill Rd	12,840	23,000	LOW	LOW	LOW
60	Pocahontas Trail	Kingsmill Rd	Busch Gardens Interchange	12,840	24,000	LOW	LOW	LOW
60	Pocahontas Trail	Busch Gardens Interchange	James City CL	12,840	18,000	LOW	LOW	SEV
132	SR 132	US 60 - Bypass Rd	SR 143 - Capitol Landing Rd	10,521	14,000	LOW	LOW	MOD
199	SR 199	I-64	Rte 603 - Mooretown Rd	25,666	44,000	LOW	LOW	LOW
199	SR 199	Rte 603 - Mooretown Rd	US 60 - Richmond Rd/JCC CL	24,658	37,000	LOW	LOW	LOW
199	SR 199	SR 143 - Merrimac Trail/JCC CL	I-64	30,857	37,000	LOW	LOW	LOW
199	SR 199	I-64	Marquis Pkwy	18,833	33,000	LOW		LOW
199	SR 199	Marquis Pkwy	Rte 641 - Penniman Rd	9,572	12,000	LOW		LOW
162	Second St	Williamsburg CL	SR 143 - Merrimac Trail	14,652	23,000	LOW		LOW
171	Victory Blvd	Newport News CL	US 17 - GW Mem Hwy	40,051	70,000	SEV	LOW	SEV
171	Victory Blvd	US 17 - GW Mem Hwy	SR 134 - Hampton Hwy	31,361	48,000	MOD	SEV	MOD
171	Victory Blvd	SR 134 - Hampton Hwy	Rte 600 - Big Bethel Rd	19,397	21,000	SEV	LOW	SEV
171	Victory Blvd	Rte 600 - Big Bethel Rd	Rte 782 - Cary's Chapel Rd	20,038	22,000	MOD	LOW	SEV
171	Victory Blvd	Rte 782 - Cary's Chapel Rd	Poquoson CL	13,235	14,000	MOD	LOW	LOW
713	Waller Mill Rd	US 60 - Bypass Rd	Rte 603 - Mooretown Rd	4,679	7,000	LOW		LOW

FIGURE 52 (CONTINUED) – CURRENT AND 2040 LRTP WEEKDAY TRAFFIC VOLUMES AND PM PEAK PERIOD CONGESTION LEVELS

Data sources: VDOT, HRTPO.

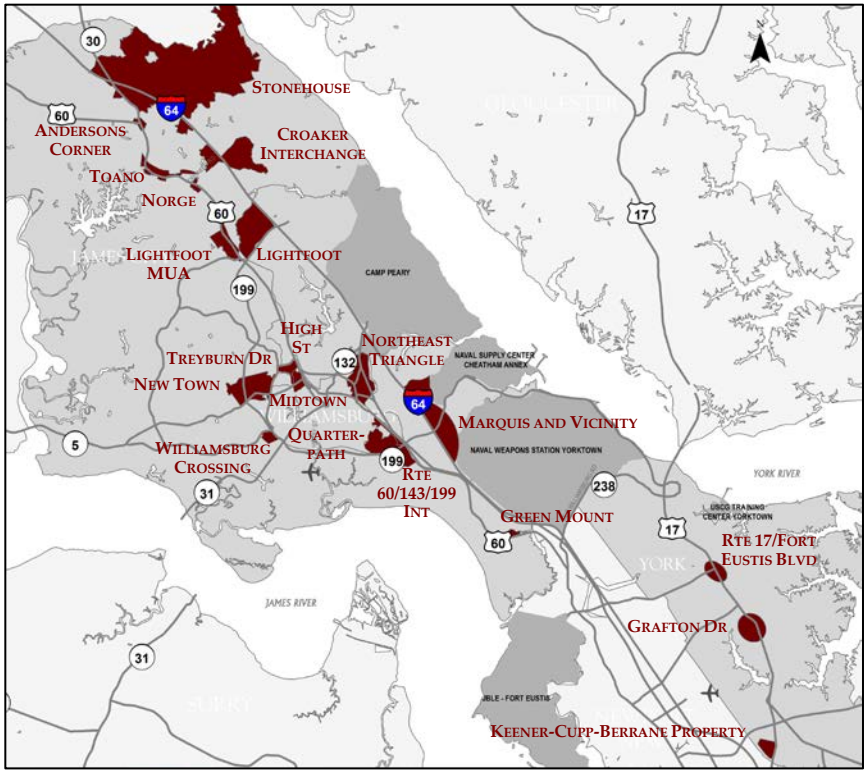
VTrans

VTrans is the Commonwealth of Virginia's statewide long-range multimodal transportation plan. VTrans – which is prepared by Virginia's Office of Intermodal Planning and Investment (OIPI) in cooperation with a variety of stakeholders – identifies the overarching vision and goals for transportation in the state. VTrans also identifies transportation investment priorities and provides direction on strategies and programs that can be incorporated into locality and MPO plans. Recent legislation passed by the General Assembly mandates that the transportation component of each locality's Comprehensive Plan must be consistent with VTrans.

VTrans focuses on the transportation needs on three levels: 1) Interregional travel through Corridors of Statewide Significance, 2) Intraregional travel through Regional Networks, and 3) Travel in local activity centers through Urban Development Areas.

As part of the original VTrans effort, the state developed a network of Corridors of Statewide Significance (CoSS). VTrans defines these CoSS as "an integrated, multimodal network of transportation facilities that connect major centers of activity within and through the Commonwealth and promote the movement of people and goods essential to the economic prosperity of the state." Two of the twelve Virginia Corridors of Statewide Significance – the East-West Corridor (I-64) and the Coastal Corridor (US Route 17) – are located within the Historic Triangle.

In addition to the Corridors of Statewide Significance, VTrans focuses on Regional Networks. Regional Networks are defined in VTrans as multimodal networks that facilitate intraregional travel within urbanized areas. While Corridors of Statewide Significance serve statewide objectives, Regional Networks – a new concept that was introduced in VTrans2040 – focus on the transportation network needed to support each region's economic competiveness.



MAP 23 – URBAN DEVELOPMENT AREAS - HISTORIC TRIANGLE

Source: Virginia OIPI.

VTrans also focuses on the needs of local activity centers referred to as Urban Development Areas (UDAs). UDAs can be any area designated by a locality for higher density development that incorporates traditional neighborhood development principles in their comprehensive plan. UDAs cover a wide variety of community types, including small towns, village centers, suburban activity areas, and urban downtown areas. UDAs were created to help localities and regional entities focus investments that attract both businesses and workers.

There are 20 designated UDAs in the Historic Triangle. The locations of each of these UDAs are shown in **Map 23**.

VTrans2040

OIPI recently led the development of the VTrans2040 plan. The plan focuses on the needs of the statewide network of Corridors of Statewide Significance, the multimodal Regional Networks that support travel within metropolitan regions, and improvements to locally-designated Urban Development Areas. The plan was developed in two phases: the VTrans2040 Vision and the VTrans2040 Multimodal Transportation Plan.

The VTrans2040 Vision was adopted by the CTB in December 2015. The VTrans2040 Vision is:

> "Virginia's multimodal transportation system will be Good for Business, Good for Communities, and Good to Go. Virginians will benefit from a sustainable, reliable transportation system that advances Virginia businesses, attracts a 21st century workforce, and promotes healthy communities where Virginians of all ages and abilities can thrive."

In addition to the vision, the VTrans2040 Vision document includes guiding principles, goals, and objectives to direct investment decisions over the horizon of the plan. These guiding principles, goals, and objectives are shown in **Figure 53** and **Figure 54** on page 99. The Vision also includes an analysis of the trends and impacts in demographic changes, commuting and mobility, economic trends, climate change, rural areas, transportation technology, and freight movement. Stakeholder input and a public survey were also included in the Vision document.

The VTrans2040 Multimodal Transportation Plan is comprised of two components: (1) 2025 Transportation Needs Assessment and (2) 2040 Scenario Analysis. The 2025 Transportation Needs Assessment addresses statewide transportation needs at the three levels listed previously – Corridors of Statewide Significance (CoSS), Regional Networks, and Urban Development Areas (UDAs). One of the key purposes of the Transportation Needs Assessment is to serve as a screen for projects applying for consideration in the SMART SCALE project prioritization process.

Guiding Principles	
1	**Optimize Return on Investments** Implement the right solution at the right price, striving to meet current needs while advancing long-term prosperity and livability.
2	**Ensure Safety, Security, and Resiliency** Provide a transportation system that is safe for all users, responds immediately to short-term shocks such as weather events or security emergencies, and adapts effectively to long-term stressors such as sea level rise.
3	**Efficiently Deliver Programs** Deliver high-quality projects and programs in a cost-effective and timely manner.
4	**Consider Operational Improvements and Demand Management First** Maximize capacity of the transportation network through increased use of technology and operational improvements as well as managing demand for the system before investing in major capacity expansions.
5	**Ensure Transparency & Accountability, & Promote Performance Management** Work openly with partners and engage stakeholders in project development and implementation, and establish performance targets that consider the needs of all communities, measure progress towards targets, and adjust programs and policies as necessary to achieve the established targets.
6	**Improve Coordination Between Transportation and Land Use** Encourage local governments to plan and manage transportation-efficient land development by providing incentives, technical support, and collaborative initiatives.
7	**Ensure Efficient Intermodal Connections** Provide seamless connections between modes of transportation to harness synergies.

FIGURE 53 – GUIDING PRINCIPLES OF VTRANS2040
Data source: Virginia OIPI.

The VTrans 2025 Transportation Needs Assessment includes the following needs for the Historic Triangle:

Corridors of Statewide Significance

- **East-West Corridor (I-64)** – The East-West Corridor follows I-64 throughout both the Commonwealth and the Historic

Triangle. Adjacent parallel roadways, such as US Route 60, are also included in the East-West Corridor (**Figure 55** on page 100). The 2025 Needs Assessment indicates a number of needs for the East-West Corridor through the Historic Triangle. These needs are related to safety, reliability, and mode choice:

- **Safety** - The safety issue listed as a need is located on US Route 60 between Lightfoot Road and Ironbound Road in Williamsburg. According to the VTrans report, there were 58 severe injuries on this segment of US Route 60 between 2010 and 2012.
- **Reliability** - The reliability issue listed as a need is located on US Route 60 at Centerville Road. Reliability is also listed as an issue on I-64 to the south of the Historic Triangle from Route 143 at Exit 247 into Newport News.
- **Mode choice** – The unreliability of Amtrak service at the Williamsburg station is listed as a need. According to the VTrans report, there was an average departure delay of 23 minutes at the Williamsburg station, which annually totaled almost 12,000 person-hours of delay.

- **Coastal Corridor (US Route 17)** - The Coastal Corridor follows US Route 17 and passes through the Historic Triangle in York County. The primary need listed in the VTrans 2025 Needs Assessment for this corridor in York County is related to congestion (**Figure 56** on page 100). Specifically, congestion is listed as an issue on two sections of US Route 17 in York County: From the Newport News City Line to Wolf Trap Road and from Denbigh Boulevard to north of Cook Road. One section of this corridor – between Hampton Highway and Wolf Trap Road – was recently widened to six lanes.

Goals and Objectives

A **Economic Competitiveness and Prosperity**

Invest in a transportation system that supports a robust, diverse, and competitive economy.

A.1 - Reduce the amount of travel that takes place in severe congestion.

A.2 - Reduce the number and severity of freight bottlenecks.

A.3 - Improve reliability on key corridors for all modes.

B **Accessible and Connected Places**

Increase the opportunities for people and businesses to efficiently access jobs, services, activity centers, and distribution hubs.

B.1 - Reduce average peak-period travel times in metropolitan areas.

B.2 - Reduce average daily trip lengths in metropolitan areas.

B.3 - Increase the accessibility to jobs via transit, walking and driving in metropolitan areas.

C **Safety for All Users**

Provide a safe transportation system for passengers and goods on all travel modes.

C.1 - Reduce the number and rate of motorized fatalities and severe injuries.

C.2 - Reduce the number and rate of non-motorized fatalities and severe injuries.

D **Proactive System Management**

Maintain the transportation system in good condition and leverage technology to optimize existing and new infrastructure.

D.1 - Improve the condition of all bridges based on deck area.

D.2 - Increase the lane miles of pavement in good or fair condition.

D.3 - Increase percent of transit vehicles and facilities in good or fair condition.

E **Healthy Communities and Sustainable Transportation Communities**

Support a variety of community types promoting local economies and healthy lifestyles that provide travel options, while preserving agricultural, natural, historic, and cultural resources.

E.1 - Reduce per-capita vehicle miles traveled.

E.2 - Reduce transportation related NOX, VOC, PM and CO emissions.

E.3 - Increase the number of trips traveled by active transportation.

FIGURE 54 – GOALS AND OBJECTIVES OF VTRANS2040

Data source: Virginia OIPI.

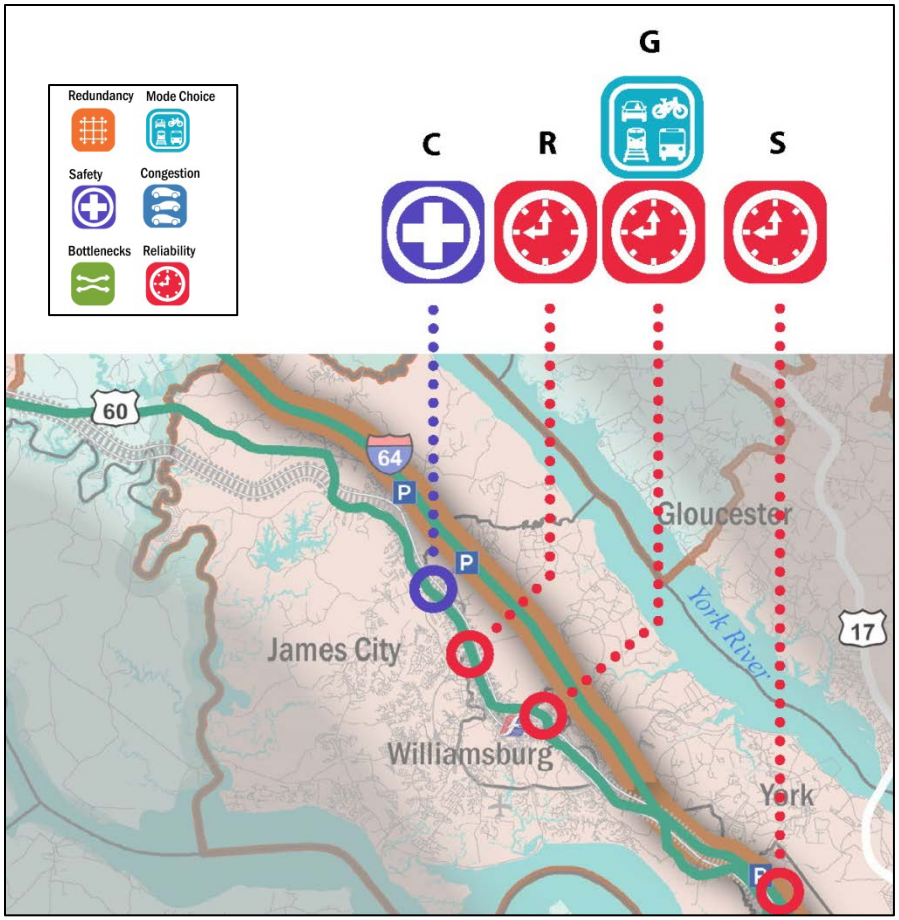


FIGURE 55 – VTRANS2040 SUMMARY OF NEEDS – EAST-WEST (I-64) CORRIDOR

Source: Virginia OIPI.

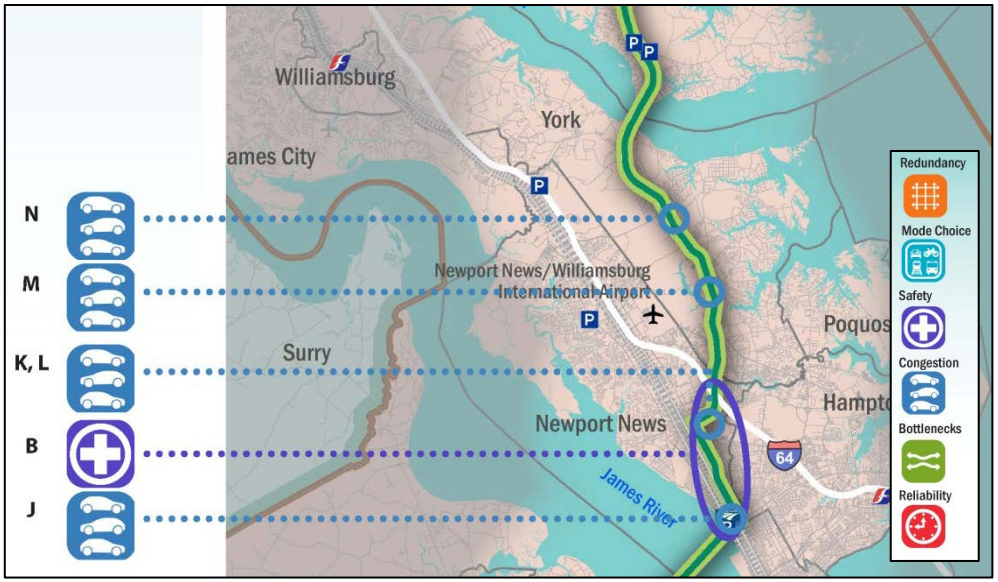


FIGURE 56 – VTRANS2040 SUMMARY OF NEEDS – COASTAL (ROUTE 17) CORRIDOR

Source: Virginia OIPI.

Regional Networks

Regional Networks – introduced as part of VTrans2040 – are multimodal networks that facilitate intraregional travel within urbanized areas and focus on the transportation network needed to support each region's economic competiveness. They fill in a gap between Corridors of Statewide Significance that serve statewide objectives and UDAs which serve local objectives.

As part of this effort, Regional Needs Assessments were done for 15 metropolitan areas throughout the state, including Hampton Roads. The Hampton Roads Regional Network Needs Assessment includes two needs that specifically apply to the Historic Triangle. Identified as Need "A" on the Summary Needs Map (**Figure 57**) is the reliability of the I-64 corridor on the Peninsula. As stated in the Regional Needs Assessment, there is a need for more capacity in the I-64 Corridor to ease congestion and improve reliability for freight and commuters. There is also the need for more options for commuters such as passenger rail and transportation demand management options. Parallel roadways in the corridor also share the same reliability issues according to the Assessment.

The mode choice options for various activity centers in Hampton Roads including Williamsburg are also listed as a Regional Network Need. In general, key activity centers featuring government centers in Hampton Roads have inadequate transit accessibility. However, this is less likely of an issue in Williamsburg than in other areas of Hampton Roads due to the extensive transit network in central Williamsburg operated by the Williamsburg Area Transit Authority (WATA).

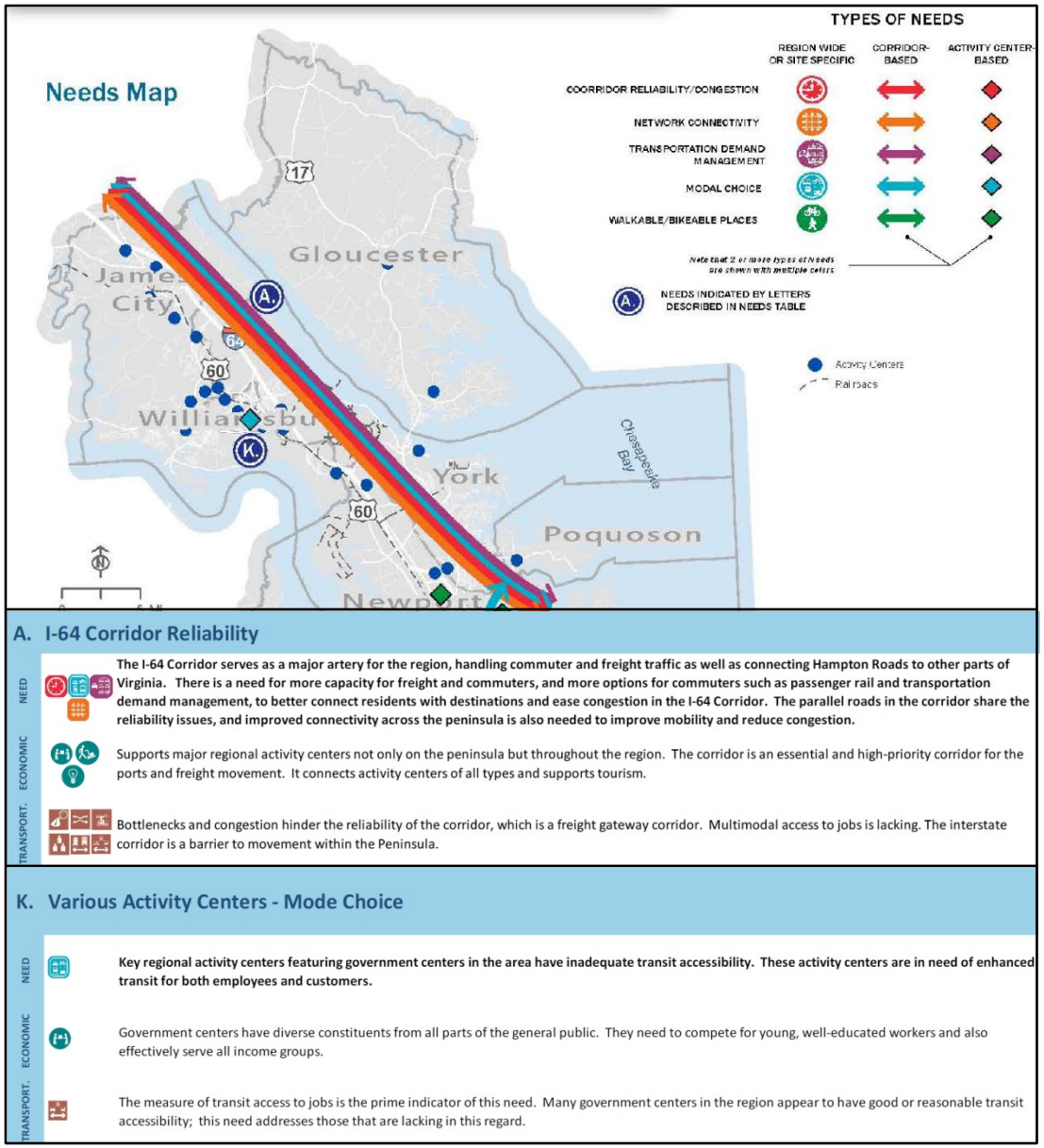


FIGURE 57 – SUMMARY REGIONAL NETWORK NEEDS MAP AND FINDINGS FOR THE HISTORIC TRIANGLE

Source: Virginia OIPI.

Urban Development Areas

There are 20 designated UDAs in the Historic Triangle. Eleven of these UDAs are in James City County, four are in Williamsburg, and five are in York County. For each UDA, the VTrans 2025 Transportation Needs Assessment includes a description of location characteristics, socioeconomic characteristics, the current and planned place type, and gaps in the transportation system. The future internal and external transportation needs for each UDA are also included, as are the highest rated overall needs. An example of an UDA Needs Assessment is shown in **Figure 58**.

Each of these UDA Needs Assessments is available at http://www.vtrans.org/archive/vtrans2040. **Figure 59** on pages 103-108 includes a summary of information from the UDA Needs Assessment for each of the 20 UDAs in the Historic Triangle.

The VTrans2040 Multimodal Transportation Plan also includes a 2040 Scenario Analysis. This addresses the uncertainty of long-range planning by testing the potential impacts of alternative future trends. Four scenarios were analyzed in VTrans2040: Industrial Renaissance, Techtopia, Silver Age, and General Slowdown.

More information is available on the VTrans2040 website at http://www.vtrans.org/archive/vtrans2040.

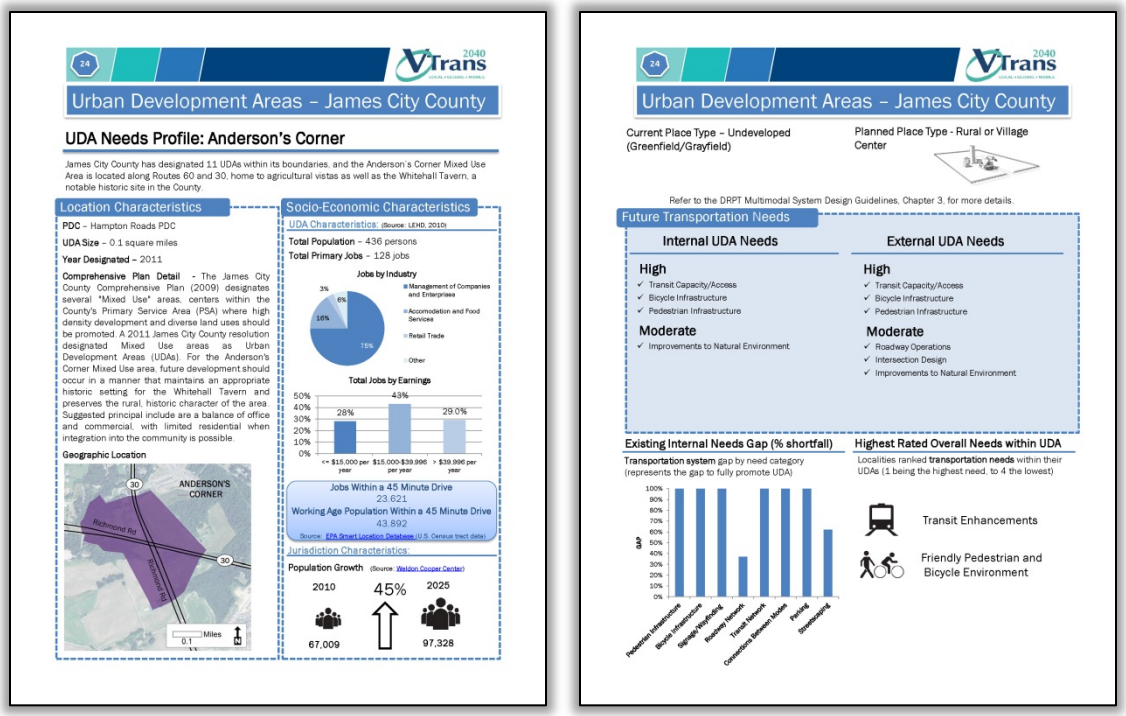


FIGURE 58 – EXAMPLE UDA NEEDS ASSESSMENT
Source: Virginia OIPI.

JAMES CITY COUNTY

UDA	Population	Employment	Place Type	Internal UDA Needs	External UDA Needs	Highest Rated Overall Needs within UDA
Anderson's Corner	436	128	Current: Undeveloped Planned: Rural or Village Center	**High** - Transit Capacity/Access - Bicycle Infrastructure - Pedestrian Infrastructure **Moderate** - Improvements to Natural Environment	**High** - Transit Capacity/Access - Bicycle Infrastructure - Pedestrian Infrastructure **Moderate** - Improvements to Natural Environment	- Transit Enhancements - Friendly Pedestrian and Bicycle Environment
Croaker Interchange	1,458	2,130	Current: Undeveloped Planned: Medium Town or Suburban Center	**High** - Roadway Capacity/Infrastructure - Transit Facilities/Amenities **Moderate** - Transit Frequency - Street Grid - Bicycle Infrastructure - Pedestrian Infrastructure - Complete Streets - Intersection Design - Signage/Wayfinding - Improvements to Natural Environment	**High** - Roadway Capacity/Infrastructure - Transit Facilities/Amenities **Moderate** - Transit Frequency - Street Grid - Bicycle Infrastructure - Pedestrian Infrastructure - Complete Streets - Intersection Design - Signage/Wayfinding - Improvements to Natural Environment	- Friendly Pedestrian and Bicycle Environment - Safety for all users
Green Mount	213	321	Current: Undeveloped Planned: Small Town or Suburban Center	**High** - Roadway Capacity/Infrastructure - Roadway Operations - Transit Frequency - Intersection Design **Moderate** - Transit Facilities/Amenities - Bicycle Infrastructure - Pedestrian Infrastructure - Complete Streets - Safety Features	**High** - Roadway Capacity/Infrastructure - Roadway Operations - Transit Frequency - Bicycle Infrastructure - Pedestrian Infrastructure - Safety Features **Moderate** - Transit Facilities/Amenities - Complete Streets - Intersection Design	- Circulation and Access - Friendly Pedestrian and Bicycle Environment
Lightfoot MUA	2,143	603	Current: Small Town or Suburban Center Planned: Small Town or Suburban Center	**High** - Roadway Capacity/Infrastructure - Bicycle Infrastructure **Moderate** - Roadway Operations - Transit Frequency - Transit Facilities/Amenities	**High** - Roadway Capacity/Infrastructure - Bicycle Infrastructure **Moderate** - Roadway Operations - Transit Frequency - Transit Facilities/Amenities	- Circulation and Access within the UDA - Friendly Pedestrian and Bicycle Environment

FIGURE 59 – UDA NEEDS ASSESSMENT SUMMARY

Source: Virginia OIPI.

JAMES CITY COUNTY

UDA	Population	Employment	Place Type	Internal UDA Needs	External UDA Needs	Highest Rated Overall Needs within UDA
New Town	1,771	991	Current: Medium Town or Suburban Center Planned: Medium Town or Suburban Center	**High** - Transit Frequency - Transit Operations **Moderate** - Transit Capacity/Access - Transit Facilities - Bicycle Infrastructure - Pedestrian Infrastructure - Signage/Wayfinding	**High** - Roadway Capacity/Infrastructure - Roadway Operations - Safety Features - Intersection Design	- Circulation and Access within the UDA - Friendly Pedestrian and Bicycle Environment
Norge	580	282	Current: Small Town or Suburban Center Planned: Small Town or Suburban Center	**High** - Transit Facilities/Amenities **Moderate** - Roadway Capacity/Infrastructure - Roadway Operations - Transit Frequency - Transit Capacity/Access - Safety Features - Off-Street Parking Capacity - Signage/Wayfinding	**High** - Roadway Capacity/Infrastructure - Roadway Operations - Transit Frequency - Transit Facilities/Amenities - Bicycle Infrastructure - Complete Streets - On-Street Parking Capacity	- Friendly Pedestrian and Bicycle Environment - Safety for all users
Rte 60/143/199 Interchange	752	104	Current: Small Town or Suburban Center Planned: Medium Town or Suburban Center	**High** - Roadway Capacity/Infrastructure - Roadway Operations - Transit Frequency - Intersection Design **Moderate** - Transit Facilities - Complete Streets	**High** - Roadway Capacity/Infrastructure - Roadway Operations - Transit Frequency - Intersection Design - Bicycle Infrastructure - Pedestrian Infrastructure - Safety Features	- Circulation and Access within the UDA - Safety for all users
Stonehouse	2,766	73	Current: Small Town or Suburban Center Planned: Medium Town or Suburban Center	**High** - Roadway Capacity/Infrastructure - Roadway Operations - Transit Capacity/Access - Bicycle Infrastructure - Pedestrian Infrastructure - Intersection Design **Moderate** - Street Grid	**High** - Roadway Capacity/Infrastructure - Roadway Operations - Transit Capacity/Access - Bicycle Infrastructure - Pedestrian Infrastructure - Intersection Design **Moderate** - Street Grid	- Access to transportation networks beyond the UDA - Friendly Pedestrian and Bicycle Environment

FIGURE 59 (CONTINUED) – UDA NEEDS ASSESSMENT SUMMARY

Source: Virginia OIPI.

JAMES CITY COUNTY

UDA	Population	Employment	Place Type	Internal UDA Needs	External UDA Needs	Highest Rated Overall Needs within UDA
Toano	1,365	238	Current: Rural or Village Center Planned: Rural or Village Center	**High** - Street Grid - Bicycle Infrastructure - Pedestrian Infrastructure - Complete Streets - Street Calming **Moderate** - Transit Frequency - Transit Facilities/Amenities - Safety Features - On-Street Parking Capacity - Intersection Design	**Moderate** - Street Grid - Bicycle Infrastructure - Pedestrian Infrastructure	- Circulation and Access - Friendly Pedestrian and Bicycle Environment
Treyburn Drive	102	1,750	Current: Undeveloped Planned: Small Town or Suburban Center	**Moderate** - On-Street Parking Capacity - Off-Street Parking Capacity - Bicycle Infrastructure	**High** - Transit Facilities/Amenities **Moderate** - Transit Frequency - Off-Street Parking Capacity	- Circulation and Access - Friendly Pedestrian and Bicycle Environment
Williamsburg Crossing	751	603	Current: Small Town or Suburban Center Planned: Small Town or Suburban Center	**Moderate** - Transit Frequency - Transit Facilities/Amenities - Bicycle Infrastructure - Complete Streets	**High** - Bicycle Infrastructure - Pedestrian Infrastructure **Moderate** - Roadway Operations - Transit Frequency - Transit Capacity/Access - Transit Facilities/Amenities - Signage/Wayfinding	- Circulation and Access - Friendly Pedestrian and Bicycle Environment

FIGURE 59 (CONTINUED) – UDA NEEDS ASSESSMENT SUMMARY

Source: Virginia OIPI.

WILLIAMSBURG

UDA	Population	Employment	Place Type	Internal UDA Needs	External UDA Needs	Highest Rated Overall Needs within UDA
High Street	1,110	142	Current: Medium Town or Suburban Center Planned: Medium Town or Suburban Center	**High** - Roadway Capacity - Transit Frequency - Bicycle Infrastructure **Moderate** - Transit Operations - Transit Facilities - Pedestrian Infrastructure - Complete Streets - Intersection Design - Improvements to Natural Environment	**High** - Transit Frequency - Bicycle Infrastructure **Moderate** - Roadway Operations - Transit Operations - Roadway Capacity - Transit Facilities - Pedestrian Infrastructure - Complete Streets - Intersection Design - Improvements to Natural Environment	- Safety for all users - Circulation and Access within the UDA - Access to transportation networks beyond the UDA - Friendly Pedestrian and Bicycle Environment
Midtown	1,078	4,223	Current: Medium Town or Suburban Center Planned: Medium Town or Suburban Center	**High** - Roadway Capacity - Transit Frequency - Street Grid - Bicycle Infrastructure - Pedestrian Infrastructure - Complete Streets - Improvements to Natural Environment - Intersection Design **Moderate** - Roadway Operations - Transit Operations - Transit Capacity - Transit Facilities - Safety Features - Off-Street Parking Capacity - Traffic Calming Features	**High** - Transit Frequency - Bicycle Infrastructure **Moderate** - Transit Operations - Transit Facilities - Pedestrian Infrastructure - Complete Streets - Intersection Design - Improvements to Natural Environment - Bicycle Infrastructure - Roadway Capacity - Roadway Operations	- Safety for all users - Circulation and Access within the UDA - Friendly Pedestrian and Bicycle Environment - Transit Enhancements

FIGURE 59 (CONTINUED) – UDA NEEDS ASSESSMENT SUMMARY

Source: Virginia OIPI.

WILLIAMSBURG

UDA	Population	Employment	Place Type	Internal UDA Needs	External UDA Needs	Highest Rated Overall Needs within UDA
Northeast Triangle	2,059	446	Current: Medium Town or Suburban Center Planned: Medium Town or Suburban Center	**High** - Transit Frequency - Bicycle Infrastructure - Pedestrian Infrastructure - Safety Features - Intersection Design **Moderate** - Roadway Operations - Transit Operations - Transit Capacity - Transit Facilities - Complete Streets - Off-Street Parking Capacity - Improvements to Natural Environment	**High** - Transit Frequency - Bicycle Infrastructure - Pedestrian Infrastructure - Complete Streets - Intersection Design **Moderate** - Roadway Operations - Transit Operations - Transit Facilities - Improvements to Natural Environment	- Safety for all users - Circulation and Access within the UDA - Friendly Pedestrian and Bicycle Environment - Transit Enhancements
Quarterpath	116	N/A	Current: Medium Town or Suburban Center Planned: Medium Town or Suburban Center	**High** - Roadway Capacity - Transit Frequency - Transit Capacity - Street Grid - Bicycle Infrastructure - Pedestrian Infrastructure - Off-Street Parking Capacity **Moderate** - Transit Operations - Roadway Operations - On-Street Parking Capacity - Transit Facilities - Intersection Design - Signage/Wayfinding - Improvements to Natural Environment	**High** - Bicycle Infrastructure - Roadway Operations - Transit Frequency - Complete Streets - Intersection Design **Moderate** - Transit Operations - Roadway Capacity - Transit Capacity - Transit Facilities - Pedestrian Infrastructure - Improvements to Natural Environment	- Access to transportation networks beyond the UDA - Circulation and Access within the UDA - Transit Enhancements - Friendly Pedestrian and Bicycle Environment

FIGURE 59 (CONTINUED) – UDA NEEDS ASSESSMENT SUMMARY

Source: Virginia OIPI.

York County

Note: Information and Needs for All UDAs in York County are combined in the UDA Needs Assessment

UDA	Population	Employment	Place Type	Internal UDA Needs	External UDA Needs	Highest Rated Overall Needs within UDA
Route 17/Ft. Eustis Blvd **Grafton Drive** **Lightfoot** **Keener-Cupp-Berrane** **Marquis and Vicinity**	6,738	1,276	Current: Medium Town or Suburban Center Planned: Large Town or Suburban Center	**High** - Pedestrian Infrastructure - Transit Operations - Transit Capacity/Access - Transit Facilities/Amenities - Street Grid - Bicycle Infrastructure - Complete Streets - Off-Street Parking Capacity - Intersection Design - Improvements to Natural Environment - Safety Features **Moderate** - Roadway Capacity - Safety Features - On-Street Parking Capacity - Signage/Wayfinding	**High** - Roadway Capacity - Transit Facilities/Amenities - Improvements to Natural Environment - Signage/Wayfinding **Moderate** - Transit Facilities - Street Grid - Bicycle Infrastructure - Intersection Design	- Circulation and Access within the UDA - Friendly Pedestrian and Bicycle Environment

Figure 59 (continued) – UDA Needs Assessment Summary

Source: Virginia OIPI.

FUTURE CONDITIONS - ACTIVE TRANSPORTATION

Various active transportation facilities in the study area have been constructed, with over 100 miles of various bikeways. Recreational cyclists also use many of the low-volume rural roadways, especially in northern part of James City County and York County. This section details bikeways and sidewalk projects included in the Six-Year Improvement Program (SYIP) and Transportation Improvement Program (TIP) and sections of the Birthplace of America Trail that are in the Historic Triangle.

SYIP/TIP BICYCLE AND PEDESTRIAN PROJECTS

There are twelve programmed bicycle and pedestrian projects in the Historic Triangle that are included in the Six-Year Improvement Program (SYIP) and Transportation Improvement Program (TIP). These projects are shown in **Figure 60**.

Many of the projects that are included in the TIP and SYIP are selected through the SMART SCALE process. Signed into law in 2014, Virginia House Bill (HB) 2 was created to ensure that limited tax dollars are invested in the projects that meet the most critical transportation needs in Virginia. Starting with the FY 2017 SYIP, candidate transportation projects throughout the Commonwealth are being scored biennially using a prioritization process – now referred to as SMART SCALE – that is based on an objective analysis of the congestion mitigation, economic development, safety, environmental quality, accessibility, and land use impacts of each project.

Three active transportation projects in the Historic Triangle were approved for SMART SCALE funding in the FY 2020 process. These projects are:

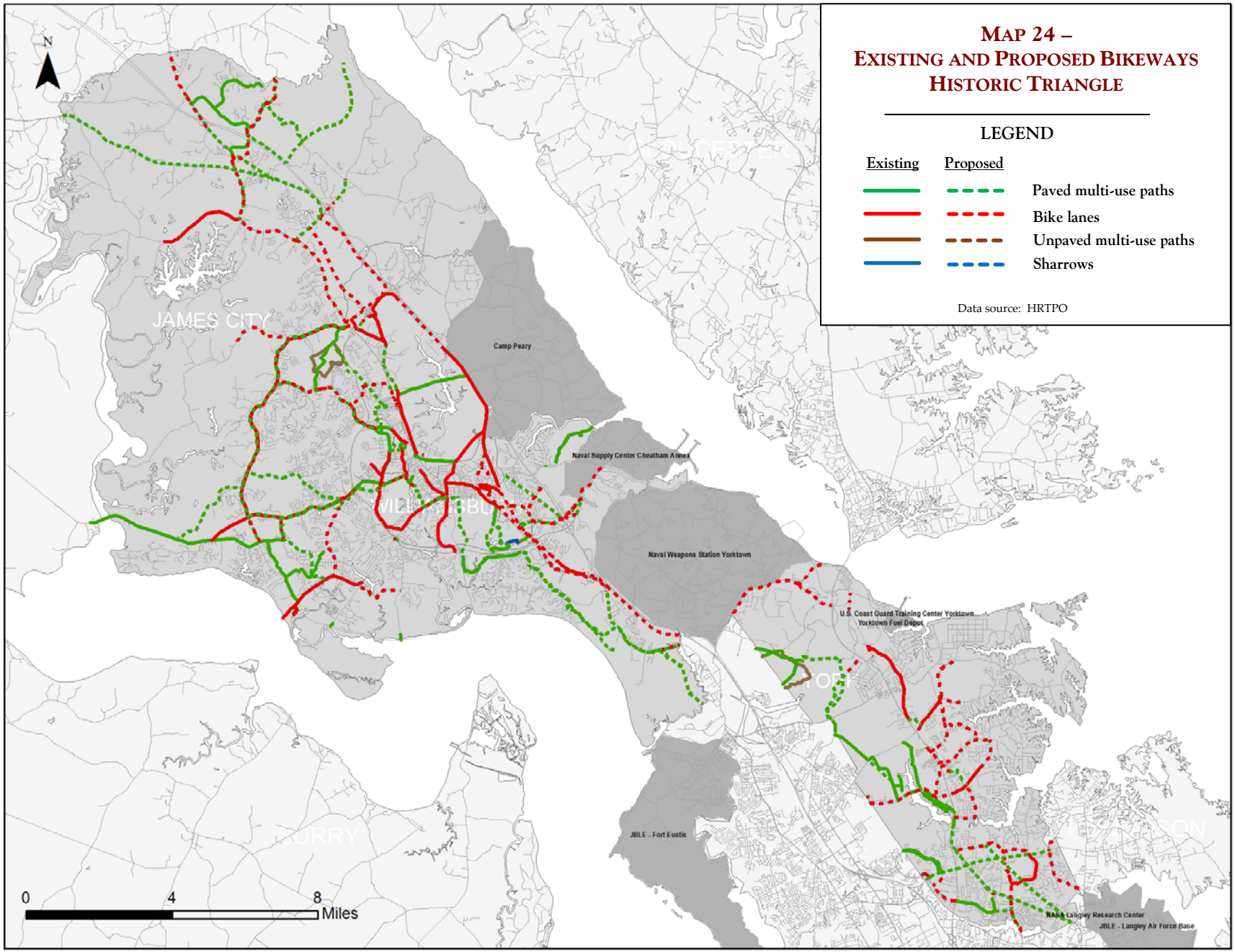
- **James City County - Longhill Road Shared Use Path** – The project will provide a 10-foot shared use path along a 0.5-mile stretch of Longhill Road from DePue Drive to Lane Place.
- **Williamsburg – Lafayette Street Widening** – This project will widen the sidewalk on the west side of the street from the north project limit to Wythe Avenue and add a shared-use path on the east side of the street to connect to the Municipal Center entrance.
- **York County - Route 171 capacity enhancements between Routes 134 and 1740** – In addition to roadway improvements to Victory Boulevard, the project will also add a 10-foot shared use path from North Bowman Terrace to Big Bethel Road and an 8-foot paved shoulder.

Map 24 shows proposed future bikeways in the Historic Triangle that have been adopted by the Williamsburg City Council and James City County and York County Boards of Supervisors. There are approximately 78 miles of proposed bike lanes in Historic Triangle, and approximately 118 miles of proposed paved multi-use paths.

Juris.	UPC	Project	Cost ($000s)	Const. Start
JCC	115512	Longhill Road Shared Use Path - From DePue Drive to Lane Place	$4,400	2024
JCC	17633	Multi-use path - Richmond Road/Croaker Road between Old Church Road and Norge Library	$2,675	2021
JCC	113271	Reconstruct Sidewalk - Richmond Road from Forge Road to Toano Middle School	$1,665	2021
JCC	113534	Safe Route to School - Ironbound Road from John Tyler Highway to Clara Byrd Baker School	$452	2021
WMB	114245	Compton Drive Multi-Use Pathway	$899	2022
WMB	115339	Lafayette Street Widening - Widen sidewalk and add multi-use path	$5,870*	2027
WMB	109074	Monticello Avenue Multi-Use Trail	$1,250	2019
WMB	113473	Sidewalk/Trail - Francis Street rom Nassau Street to S. England Street	$298	2021
YC	113278	Sidewalks - George Washington Mem. Highway, Hampton Highway, and Hubbard Lane	$480	2020
YC	111357	Sidewalk - Bypass Road from Williamsburg CL to Route 132	$697	2019
YC	113276	Sidewalks - Merrimac Trail, Penniman Road, Old Williamsburg Road, and Big Bethel Road	$520	2021
YC	115509	Victory Blvd - Multi-use path between North Bowman Terrace and Big Bethel Road	$3,630*	2028

FIGURE 60 – BICYCLE AND PEDESTRIAN PROJECTS INCLUDED IN THE SIX-YEAR IMPROVEMENT PROGRAM OR TRANSPORTATION IMPROVEMENT PROGRAM

Source: VDOT, HRTPO. * - Project costs include the entire project, including roadway improvements.



MAP 24 – EXISTING AND PROPOSED BIKEWAYS HISTORIC TRIANGLE

LEGEND

Existing	Proposed	
		Paved multi-use paths
		Bike lanes
		Unpaved multi-use paths
		Sharrows

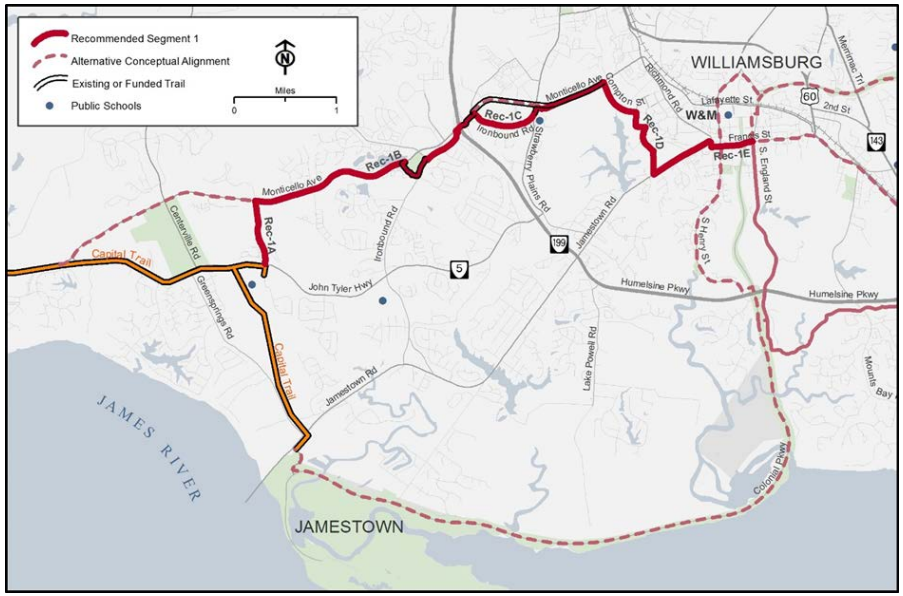
Data source: HRTPO

BIRTHPLACE OF AMERICA TRAIL

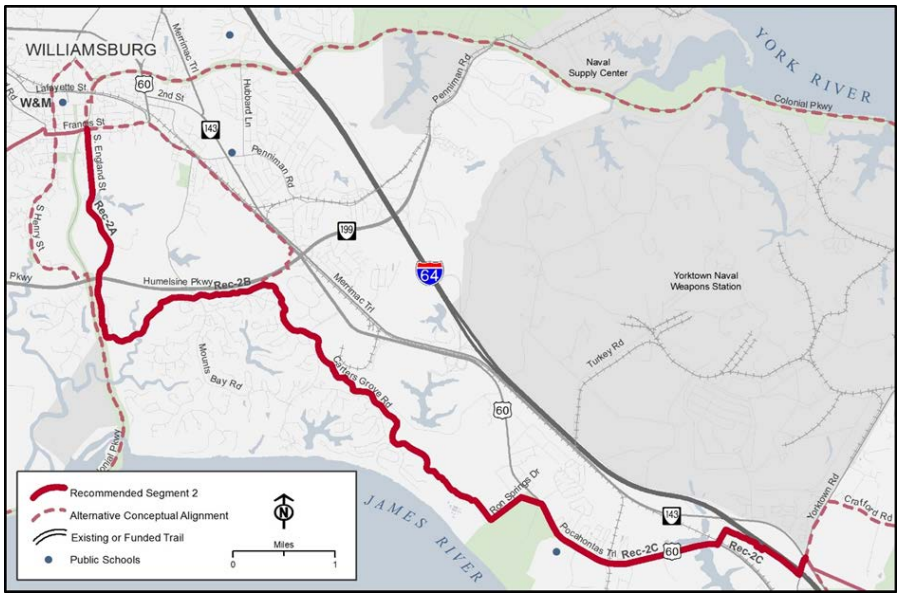
The vision of the Birthplace of America Trail is to connect the Virginia Capital Trail to Fort Monroe and the South Hampton Roads Trail via two off-road, shared-use paths designed for non-motorized traffic. The Birthplace of America Trail seeks not only to connect the region through active transportation, but to also showcase the region's unique cultural and historic heritage. Some sections of this trail are shown on **Map 24** on page 110. Sections of the Birthplace of America Trail that are planned to go through the Historic Triangle are:

1. **Capital Trail to Williamsburg** – This section of the Birthplace of America Trail begins at Jamestown High School on Route 5, travels north on Greensprings Plantation Drive, and then east on Monticello Avenue. The route then follows Ironbound Road, Monticello Avenue, and Compton Drive to the William & Mary Campus before connecting Colonial Williamsburg via Jamestown Road and Francis Street (**Map 25**). The length of this section is 7.1 miles, of which only 1.1 miles are constructed/funded.

2. **Williamsburg to Yorktown Road** – The recommended route from Colonial Williamsburg follows South England Street to Carters Grove County Road and then parallels Route 60 (**Map 26**). After crossing Skiffes Creek, the route passes over Route 60 and the CSX rail line and eventually follows Yorktown Road under I-64 before connecting to Jefferson Avenue and Newport News Park. The total length of the segment is 11.5 miles, all of which is yet to be constructed.



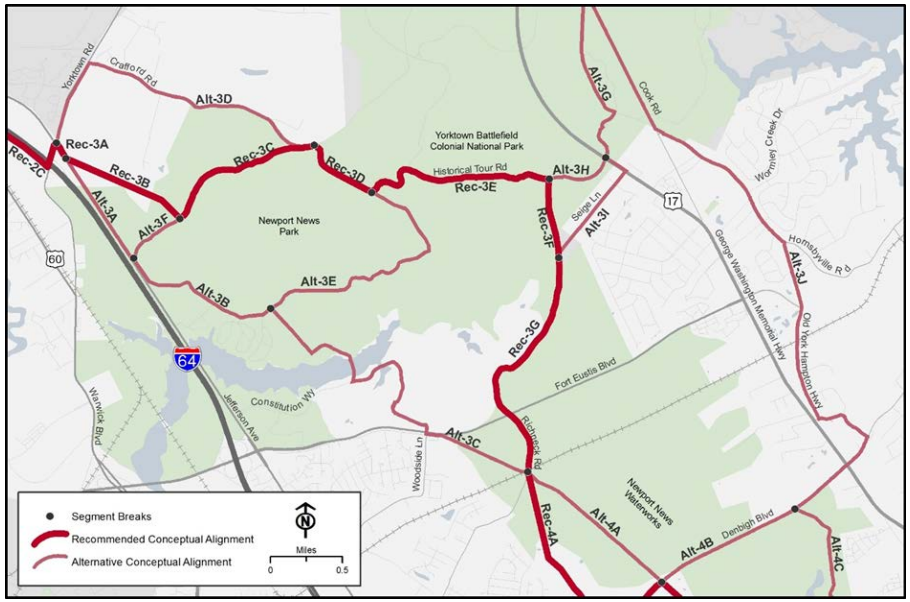
MAP 25 – CAPITAL TRAIL TO WILLIAMSBURG TRAIL SEGMENT
Source: HRTPO.



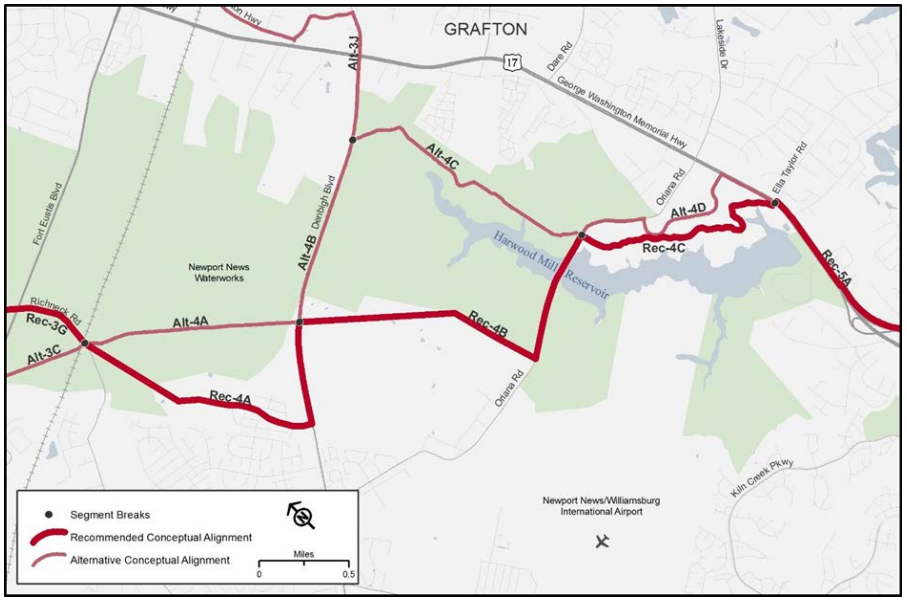
MAP 26 –WILLIAMSBURG TO YORKTOWN ROAD TRAIL SEGMENT
Source: HRTPO.

3. **Yorktown Road to Richneck Road** – The route crosses Yorktown Road and proceeds southeast along the eastern edge of Jefferson Avenue, continuing southeast along a utility easement and following the northern section of the Newport News Park Bikeway which connects it to the Encampment Tour Road at the Yorktown Battlefield. Additionally, the route follows the Yorktown Battlefield Tour Road towards Route 17 and proceeds south along a dirt road before crossing Fort Eustis Boulevard and following Richneck Road (**Map 27**). The total length of this segment is 6.5 miles, of which 1.7 miles are completed/funded.

4. **Richneck Road to Route 17** – From Richneck Road, the route travels southeast through an area scheduled for development, following Denbigh Boulevard and passing through the Newport News Waterworks property, ultimately connecting to Oriana Road. The trail then crosses the Hardwoods Mill Reservoir and utilizes existing trails in the McReynolds Athletic Complex (MAC). After the MAC, the trail proceeds southeast to Route 17 via a utility easement (**Map 28**). The total length of this section is 5.5 miles, of which 2.5 miles are funded/constructed.

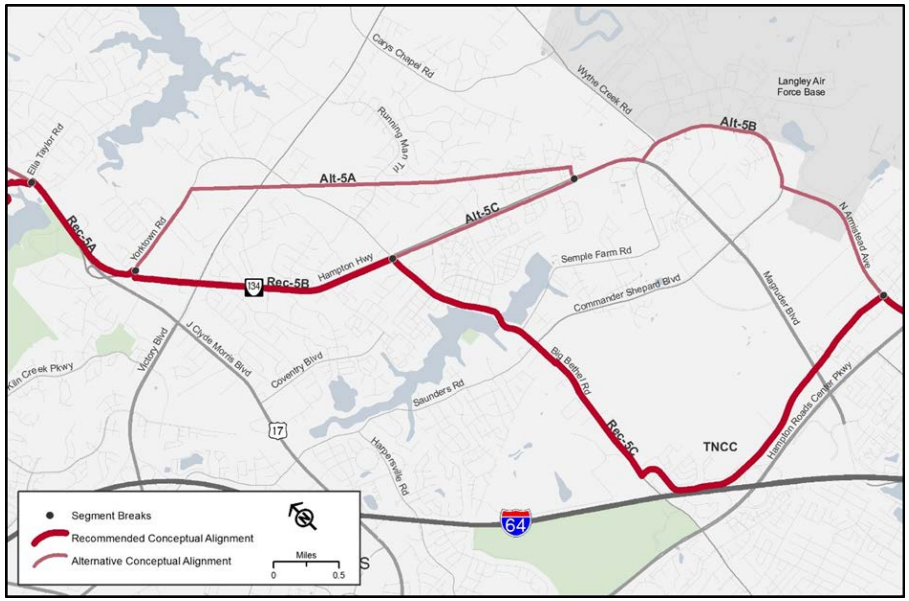


MAP 27 –YORKTOWN ROAD TO RICHNECK ROAD TRAIL SEGMENT
Source: HRTPO.



MAP 28 – RICHNECK ROAD TO ROUTE 17 TRAIL SEGMENT
Source: HRTPO.

5. **Route 17 to Semple Farm Road (County border)** – The route crosses Route 17 at Ella Taylor Road and proceeds south along Route 134 and transitions to Hampton Highway via Cardinal Lane & Yorktown Road. Afterwards, the route follows the western edge of Hampton Highway, and takes a right on Big Bethel Road (**Map 29**). The total length of this segment is 8.5 miles, of which 0.4 miles are completed/funded.



MAP 29 – ROUTE 17 TO SEMPLE FARM ROAD (COUNTY BORDER)
Source: HRTPO.

Continued regional coordination can help ensure that the Birthplace of America Trail is constructed in a logical and connected fashion, instead of taking a piece-by-piece approach resulting in disconnected segments. Localities should continue to share findings and work together towards this goal.

MAINTENANCE

Maintenance of active transportation facilities is an issue for localities in the study area. Issues that sidewalks are facing include disrepair, vegetation growth and crumbling concrete or they are covered with sand, gravel and debris.

Per VDOT's *Policy of Integrating Bicycle and Pedestrian Accomodations*, VDOT will "maintain bicycle and pedestrian accommodations as necessary to keep the accommodations usable and acessible". However, this is dependent on funding available for these efforts, both for VDOT and for cities.

FUTURE CONDITIONS - RAIL

HIGHER SPEED PASSENGER RAIL

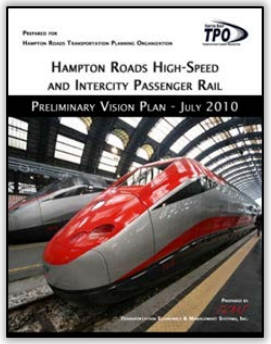
The Virginia Department of Rail and Public Transportation (DRPT) has investigated improved passenger rail service between Richmond and Hampton Roads as an extension of the Southeast High Speed Rail Corridor. The Federal Railroad Administration (FRA) approved the Richmond/Hampton Roads TIER 1 Final Environmental Statement in August 2012 and the TIER 1 Record of Decision in December 2012.

To complement DRPT's work in the Richmond to Hampton Roads passenger rail corridor, the HRTPO Board approved a resolution to support High-Speed and Intercity Passenger Rail at a special meeting held in October 2009. The resolution supported the designation of a high-speed rail corridor along the Norfolk Southern/Route 460 rail corridor from Norfolk to Richmond and enhanced intercity passenger rail service along the CSX/I-64 rail corridor from Newport News through the Historic Triangle to Richmond.

Furthermore, the resolution identified the need to procure consultant services to advise the HRTPO on necessary steps to position Hampton Roads to be competitive for future rounds of federal high speed and intercity passenger rail funding, and to develop a regional high-speed and intercity passenger rail campaign and vision plan component for the Long-Range Transportation Plan.

HAMPTON ROADS PASSENGER RAIL VISION PLAN

Subsequent to the 2009 HRTPO board resolution, a consultant team specializing in passenger rail planning was secured for the HRTPO, in coordination with DRPT and Virginia Department of Transportation, to evaluate the potential of high speed and enhanced passenger rail service alternatives in the designated corridors. Additionally, a Passenger Rail Task Force was created to provide input and direction to the consultant team at key decision making points throughout the planning process.



The consultant worked closely with HRTPO and DRPT staff and the Passenger Rail Task Force to receive technical assistance, guidance, and stakeholder input as the study progressed. The following technical reports were produced by the consultant and approved by the HRTPO Board:

Phase 1 (approved July 2010)

- Preliminary Vision Plan Report
- Preliminary Ridership and Revenue Forecasts
- Preliminary Operations and Operating Costs
- Preliminary Infrastructure Analysis

Phase 1B - Blueprint Study (approved December 2010)

Phase 2A - Data Collection for the Norfolk-Richmond Corridor (approved March 2013)

Phase 2B - Hampton Roads Passenger Rail Vision Plan Alternatives Analysis (approved March 2014)

- Executive Summary
- Final Report
- Appendices

Hampton Roads High Speed Passenger Rail Vision Plan (approved November 2014)

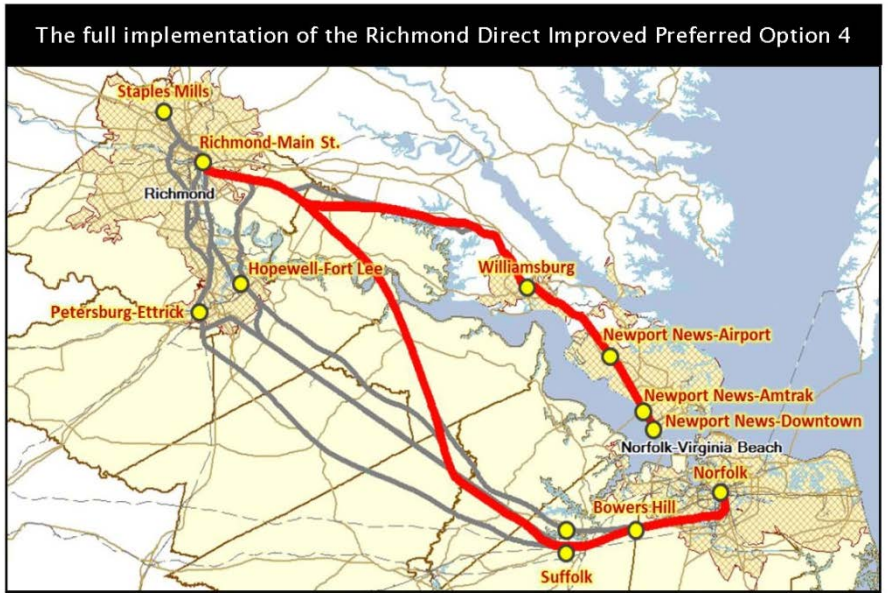
- Executive Summary
- Final Report
- Appendices

The Hampton Roads High Speed Passenger Rail Vision Plan was an important step in developing conventional passenger rail service in the Hampton Roads corridor. For the Norfolk-Richmond corridor, there were three initial route options developed by utilizing a combination of greenfield and existing rail rights-of-way. The Peninsula Supplement of the study looked at the development of higher speed rail service for the Peninsula – passing through the Historic Triangle – which was analyzed as Option 4 – Richmond Direct Improved (**Map 30**).

A representative route was developed for this preferred option (Option 4) from a number of potential route options. The selected route primarily uses the existing CSX rail line from Newport News through Williamsburg to Toano and uses new tracks through a greenfield connection along a power line right-of-way from Toano to Roxbury where it connects to the Norfolk-Richmond route (**Map 31**).

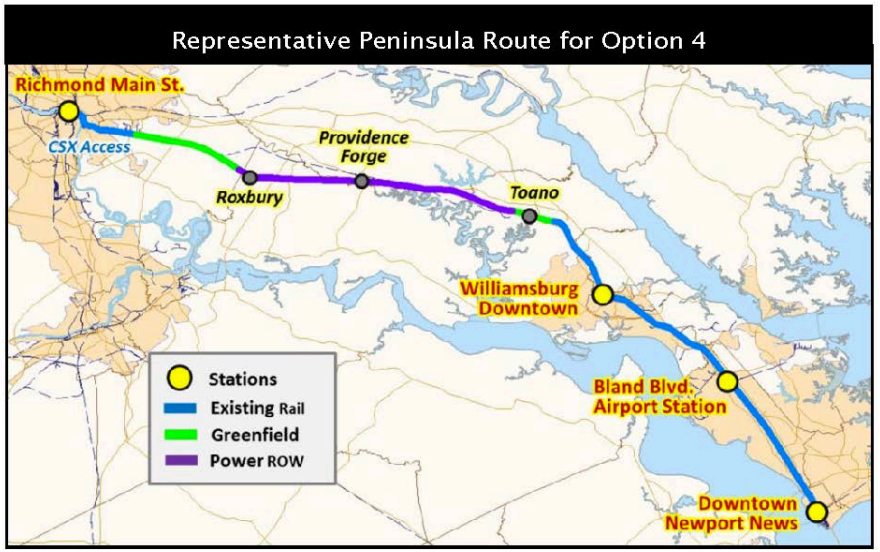
It is assumed that diesel trains that can travel at up to 130 mph would be used on the Peninsula Route under Option 4. The trains would be expected to travel at maximum speeds on tracks on dedicated right-of-way and travel at 90 mph on tracks owned by CSX.

Ridership is projected to be maximized under the Option 4 – Richmond Direct Improved alternative. Total annual ridership in the Year 2035 is projected to be 8.6 million person-trips, of which about 35% of the ridership would be on the Peninsula Route. This compares to a total ridership of 5.8 – 6.1 million person-trips under the other three analyzed options.



MAP 30 – FULL IMPLEMENTATION OF THE RICHMOND DIRECT IMPROVED PREFERRED OPTION 4

Source: Hampton Roads High Speed Passenger Rail Vision Plan



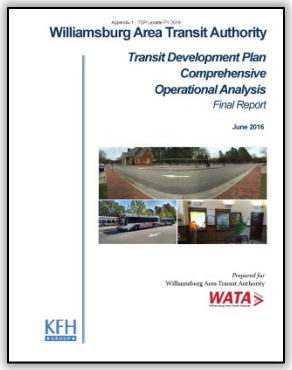
MAP 31 – REPRESENTATIVE PENINSULA ROUTE FOR OPTION 4

Source: Hampton Roads High Speed Passenger Rail Vision Plan

FUTURE CONDITIONS - PUBLIC TRANSPORTATION

Future public transportation services in the Historic Triangle will be guided by regional plans including the Williamsburg Area Transit Authority's (WATA's) Transit Development Plan/Transit Strategic Plan and the Hampton Roads Regional Transit Vision Plan. Funding availability, however, will be one of the constraints for implementation.

TRANSIT DEVELOPMENT PLAN



Transit Development Plans (TDPs) are short-range plans that identify the services that a transit system intends to implement, estimate the resources needed, and document funding opportunities that are likely available. The Virginia Department of Rail and Public Transportation (DRPT) has required the preparation and adoption of a TDP at least every six years by any public transit operator receiving state funding. DRPT provides a set of TDP requirements that form the basis of the planning effort.

The *Williamsburg Area Transit Development Plan Comprehensive Operational Analysis* was completed in June 2016 and covers the period from Fiscal Year 2016 through Fiscal Year 2022. Most of the recommendations in the TDP have been implemented, and many of these improvements are described in the Current Conditions section of this report. Projects that are still in progress include the new administrative/maintenance facility described previously in the report, the transfer hub in the northern part of the service area, and a bus stop improvement project that would include a system-wide inventory and recommendations and cost estimates for improvements. More information on upcoming programmed projects is included on the next page.

The TDP also includes a number of vision projects that are intended to be addressed in the later years of the Plan's horizon period. One project is a route along the Colonial Parkway to serve as a shuttle between the area's historic sites. The Colonial Williamsburg Foundation previously operated this service from mid-March to mid-November for two seasons after public funding was no longer available. Local stakeholders have indicated a desire to resume this service although no plans have been made to do so yet.

Another vision project from the TDP involves 30-minute frequency service throughout the day for WATA routes that meet ridership standards of 20 passenger trips per revenue hour and/or total annual ridership of 140,000 passenger trips. Currently, only two routes meet this standard. Local stakeholders have indicated a desire to provide more frequent service, and VTrans 2040 identified the need for transit frequency enhancements in a number of Urban Development Areas (UDAs). However, WATA and its stakeholders will have to weigh the impacts of providing more frequent service while also reaching as many parts of the service area as possible. Technology improvements may offer the best opportunities to achieve these goals.

In the future, WATA is expected to move beyond depending on fixed-route service to meet the public transportation needs of the area and look towards the design and provision of services like demand-response, flex, microtransit, and autonomous vehicles. Also, partnerships with transportation network companies (TNCs), like Uber and Lyft, are being used to provide "last-mile" service from public transportation to further destinations.

TIP/LRTP Projects

WATA has a number of operational and capital projects included in the current Hampton Roads Transportation Improvement Program (TIP). These projects include the purchase of expansion buses for new service, bus replacements, bus shelters and stop enhancements, and mobile technology. Examples of projects currently included in the TIP include:

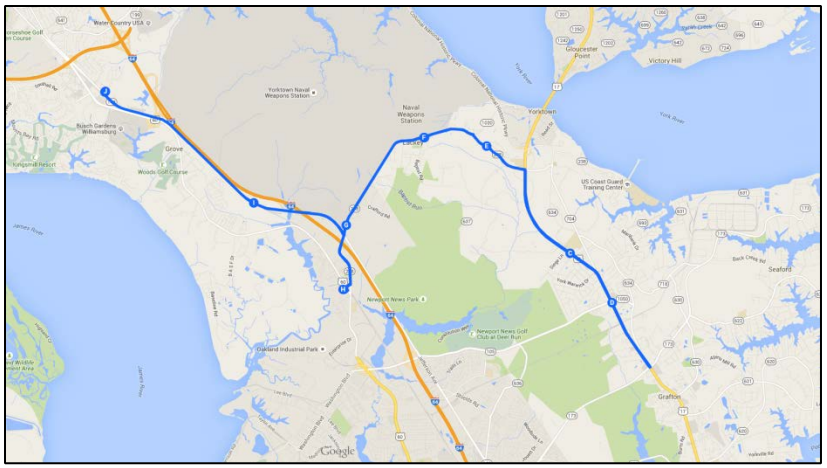
- The new transfer hub in the northern part of the service area
- The new administrative/maintenance facility
- Purchase of 19 replacement buses
- Purchase of 7 compressed natural gas (CNG) replacement buses
- Purchase of 5 replacement trollies
- Construction of additional bus shelters
- New Demonstration Routes – Lackey/Mounts Bay (currently in service) and the two routes described below

Many of these projects are funded with Congestion Mitigation and Air Quality (CMAQ) Program funds. CMAQ is a federal program that has been implemented to support surface transportation projects and other related efforts that contribute air quality improvements and provide congestion relief.

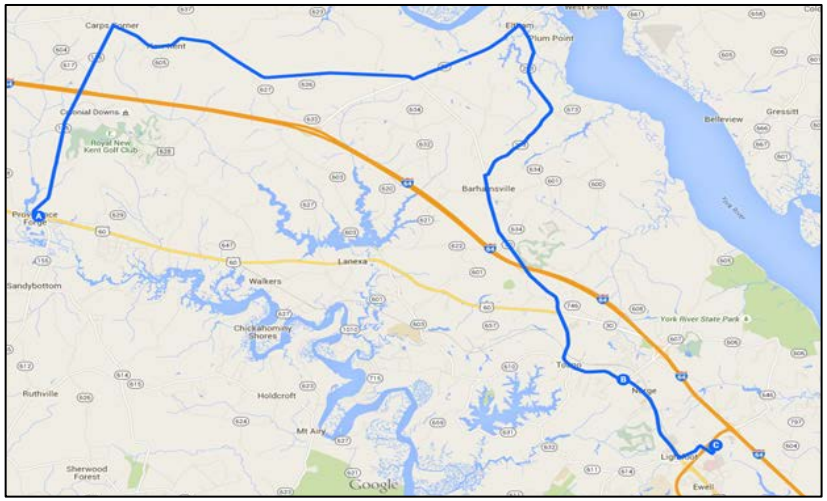
Only one project for WATA is included in the 2040 Hampton Roads Long-Range Transportation Plan – the new administrative/ maintenance facility.

Demonstration Routes

WATA has two demonstration routes that have been approved for funding through the CMAQ program. One project is titled the York County – Southeast route (**Map 32**). This demonstration route is expected to start in October 2021 and operate using CMAQ funds



Map 32 – York County – Southeast Demonstration Route
Source: WATA.



Map 33 - Upper York County – New Kent Connector Demonstration route
Source: WATA.

until December 2024. The three-year CMAQ funding total for the route is $1.6 million.

The other demonstration route is the Upper York County – New Kent Connector route (**Map 33** on page 117). This route is also expected to start operating in October 2021 and operate using CMAQ funds until December 2024. The three-year CMAQ funding total for the Upper York County – New Kent Connector route is $1.3 million.

These two demonstration routes are subject to change prior to implementation. The actual capital and operational costs may vary depending on costs and economic conditions at the time of implementation.

Transit Strategic Plan

WATA's current Transit Development Plan will be in effect through Fiscal Year 2022, and WATA will be required to update it to be effective in Fiscal Year 2023. However, new legislation requires that the updated plan will need to be what is termed as a Transit Strategic Plan (TSP) rather than a Transit Development Plan.

The Virginia General Assembly passed legislation in 2018 that requires transit agencies operating in urbanized areas to develop a Transit Strategic Plan (TSP) to ensure that transit services are planned in a way that better meets the mobility needs of their communities. According to DRPT, the main goal of a TSP is to "create a strategic blueprint outlining desired changes that will improve the provision of transit services throughout each agency's service area within existing funding structures. This is an opportunity for each agency to look at their system as a blank slate, re-examine the priorities of stakeholders and riders, and make difficult choices concerning where and how to provide services in an efficient and cost-effective manner."

DRPT lists the following purposes of a TSP:

- To serve as a strategic planning, management, and policy document for transit operators in urbanized areas
- To identify areas for improved operational efficiency
- To assess the type of operating services for different service areas and needs
- To review and assess the performance of routes, route design standards, and schedule standards
- To examine transit needs in order to identify ways to improve access for underserved areas
- To inform DRPT of transit operators' capital, operating, and maintenance needs
- To provide the basis for inclusion of an operator's capital and operating programs in planning and programming documents such as the SYIP, TIP, Statewide Transportation Improvement Program (STIP), and regional Long-Range Transportation Plan
- To provide a clear understanding of unmet or unfunded needs
- To develop and track the progress of short-, mid-, and long-term goals for transit in the region
- To continually aim to improve efficiency and effectiveness of public transportation services

The planning horizon for TSPs is ten years, and a major update to each TSP must occur once every five years. However, the plan must be amended each year if there is a change in conditions such as organizational or governance changes, fare increases, new services or facilities, or changes in available funding.

More information on Transit Strategic Plans is available at http://www.drpt.virginia.gov/media/2526/transit-strategic-plan-guidelines-draft_clean_082918.pdf.

HAMPTON ROADS REGIONAL TRANSIT VISION PLAN

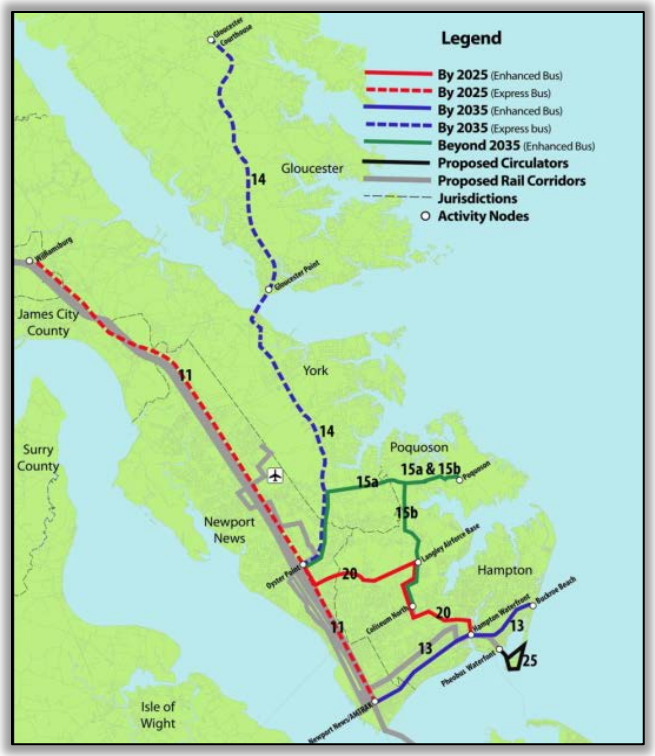
The Virginia Department of Rail and Public Transportation, Hampton Roads Transit, and Williamsburg Area Transit Authority developed *The Hampton Roads Regional Transit Vision Plan*,[3] published in February 2013. The HRTPO, its member localities, and the Hampton Roads Partnership also participated in this effort.

The Hampton Roads Regional Transit Vision Plan (TVP) looks into 2025 and beyond, providing a concept for a regional rapid transit network that connects major employment and population centers in Hampton Roads, whose population and economy will continue to grow resulting in increased demand on the region's transportation infrastructure. The plan's vision is written as follows:

> "An integrated public transit network will provide Hampton Roads with transportation choices, thereby ensuring greater mobility, economic development, environmental protection, energy independence, and quality of life."

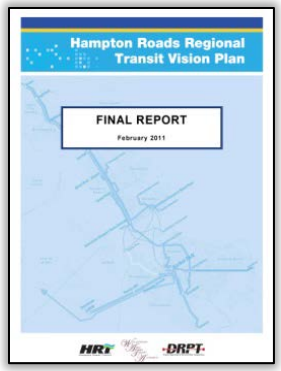
The TVP is the result of two phases: an initial phase which elaborated the transit vision statement and goals and assembled a technical committee of representatives of the 13 local government jurisdictions and regional and state organizations; and phase two which refined the initial recommendations and provided a more detailed series of analyses including expanded local stakeholder outreach, land use analysis, market and economic analysis, capital cost estimates, ridership forecasting, marketing framework plan, and overall evaluation of transit corridors.

This long-term transit development plan includes various proposed corridors and



MAP 34 – PENINSULA TRANSIT VISION PLAN BUS NETWORK RECOMMENDATIONS
Source: Hampton Roads Regional Transit Vision Plan

MAP 35 – REGIONAL TRANSIT VISION PLAN
Source: Hampton Roads Regional Transit Vision Plan



[3] *Hampton Roads Regional Transit Vision Plan*, Virginia Department of Rail and Public Transportation, February 2013.

projects across the region (**Map 34** and **Map 35** on page 119). The projects – which include light rail, commuter rail, streetcar, enhanced bus service, express bus, bus rapid transit, and ferry, are grouped by time frame (short-range, mid-range, long-range, and extended-range). There are several corridors that impact the Historic Triangle: Corridor 11, Corridor 14, Corridor 15a, and Corridor A.

Corridor 11: Downtown Newport News to Williamsburg

This express bus service corridor is approximately 31 miles long. Commuting demand in the corridor is high because of high employee transit demand in Williamsburg, high employment in Williamsburg and Newport News, several major activity centers in the corridor, and the availability of express bus service.

The TVP envisions expanding express bus service in this corridor in the short- and mid-range horizons via MAX service by HRT, which serves regional commuter trips with coach bus vehicles. The estimated capital cost provided by the Vision Plan for express bus service in this corridor is between $3.1 and $4.8 million in 2009 dollars.

The TVP recommends replacing express bus service on this corridor with commuter rail in the long-range horizon.

Corridor 14: Oyster Point to Gloucester

Corridor 14 runs along Route 17 through York County between the Oyster Point area in Newport News and the Gloucester Courthouse. The TVP envisions implementing express bus service in this corridor in the long-range horizon. The ridership estimate for this service averages 25 passengers per weekday. The Vision Plan estimates the cost of this service to be between $2.5 million and $4.0 million in 2009 dollars.

Corridor 15a: Oyster Point to Poquoson

Corridor 15a is an 11-mile long corridor connecting the Oyster Point Area of Newport News with Poquoson. In York County, Corridor 15a follows George Washington Memorial Highway and Victory Boulevard. The TVP envisions implementing express bus service in this corridor in the long-range horizon. The estimated cost for implementing this service is between $1.5 million and $2.3 million in 2009 dollars, while ridership is estimated to be 25 passengers per weekday.

Corridor A: Downtown Newport News to Toano

Stretching from Toano in the northern part of James City County to Downtown Newport News along the CSX corridor, Corridor A is served in the TVP by commuter rail in the long-range horizon, replacing the express bus service in Corridor 11 recommended in the short-range horizon.

According to the TVP, commuter rail service should begin between Downtown Newport News and Williamsburg in the long-range horizon, with service extended to Lightfoot and Toano in the extended-range horizon. A reason for the extended time frame for the Lightfoot and Toano portion of this recommendation is the capacity issue created by Amtrak and freight rail sharing the same corridor. This capacity issue would need to be addressed before implementing commuter rail in this corridor. An additional factor that the TVP details is a dependency on land use patterns, specifically transit-oriented uses such as high density mixed-use development, in the Williamsburg, Lightfoot, and Toano areas.

The Transit Vision Plan estimate for the capital costs for commuter rail in Corridor A is between $201 million and $612 million in 2009 dollars. However, this estimate does not include the cost of the segment from Lightfoot to Toano. The overall ridership projections for this service are between 2,200 and 3,700 riders per weekday in 2034.

FUTURE CONDITIONS - BRIDGES

As bridges throughout the Historic Triangle continue to age, allocating adequate funding to maintain bridges will continue to be challenging. The Virginia General Assembly passed House Bill 1887 in 2015 to provide a dedicated funding source for improving the condition of Virginia's bridges and pavements.

HB 1887 – also referred to as the State of Good Repair (SGR) program – requires that 45% of the state's construction program be allocated to improve deficient bridges and pavements. The Commonwealth Transportation Board approved a resolution in June 2016 that stated that structures will be selected for SGR program funds based on a prioritization formula. Bridge projects are eligible for SGR funding if they meet the following criteria:

- The bridge is classified as structurally deficient.
- The bridge meets the definition required to be included in the National Bridge Inventory, which means it is on a public roadway and is greater than 20 feet in length.
- The project meets the definition of bridge rehabilitation and replacement in FHWA's Bridge Preservation Guide.
- The proposed project must take the bridge out of structurally deficient status.
- Inspections on the structure must be current.

Bridges are prioritized for rehabilitation or replacement by VDOT. This prioritization is based on a formula that includes factors that take into account the bridge's importance, condition, design redundancy, structure capacity, and improvement cost-effectiveness. An SGR Score is calculated for each eligible bridge using this formula, and those bridges with higher SGR Scores are generally prioritized over those with lower SGR Scores.

As detailed in the Current Conditions section of this report, there is only one bridge in the Historic Triangle – the Route 143 bridge over Queen Creek – that is classified as structurally deficient as of January 2019. Funding for rehabilitation or replacement of this structure is not included in the current (FY 2020 – FY 2025) Six-Year Improvement Program. There is funding, however, to replace the Hampton Highway bridges over Brick Kiln Creek (starting in 2019) and the Hicks Island Road Bridge over Diascund Creek (starting in 2020). Funding is also allocated to rehabilitate the structure at the Jamestown-Scotland Ferry that connects the ferry to the James City County shore. In addition, another bridge in James City County – Jamestown Road (Route 31) over Powhatan Creek – is included for replacement in the 2040 Regional Long-Range Transportation Plan.

Upcoming Bridge Project: Hampton Highway

As part of HRTPO's Hampton Roads Regional Bridge Study, the cost of maintaining bridges in Hampton Roads through 2045 – the horizon year for the next regional Long-Range Transportation Plan – was analyzed. HRTPO staff used a methodology that is similar to the one used by VDOT for this analysis. HRTPO staff assumed that bridges would need to be replaced at an age of 70 years, and the replacement cost for those bridges that are currently 70+ years old and/or currently classified as structurally deficient are divided up over the next 25 years. The bridge replacement costs used in this analysis were based on the Statewide Planning Level Cost Estimates

provided by VDOT's Transportation and Mobility Planning Division (TMPD) and inflated to the expected year of expenditure.

HRTPO determined that if none of the existing bridges in Hampton Roads are replaced by 2045, nearly half (48%) of the bridges in the region will be 70 years old or older by 2045. Based on this, HRTPO staff calculated that $4.5 billion would be necessary to fund the maintenance of bridges in Hampton Roads through 2045.

Looking only at the Historic Triangle, 75 bridges (60%) would be expected to be 70+ years old by 2045 if none of the existing bridges are replaced. Funding for the maintenance of these bridges is estimated to require $335 million (in year of expenditure) through 2045.

On a jurisdictional level, 31 bridges in James City County would be expected to be 70+ years old by 2045 and require $117 million in funding (in year of expenditure). In Williamsburg, 8 bridges would be expected to be 70+ years old and require $22 million in funding. And in York County, 36 bridges would be expected to be 70+ years old by 2045 and require $196 million in funding.

Upcoming Bridge Project: Hicks Island Bridge

FUTURE CONDITIONS – FREIGHT

Since freight is primarily moved by trucks on highways for both Hampton Roads and the Historic Triangle, the focus of this section is on truck movements. Using IHS Transearch from the Regional Freight Study[4], HRTPO summarized all truck freight transported in the Commonwealth of Virginia for 2012 and 2040. This analysis includes all freight moved by truck in Virginia, which includes inbound, outbound, through Virginia, and within Virginia.

IHS TRANSEARCH

IHS Transearch is a unique planning tool that helps transportation planners, transportation providers, and government agencies analyze current and future freight flows by origin, destination, commodity, and transport mode[5]. IHS Transearch is the most widely recognized and used commercial freight data source in the United States and has been used extensively over the last three decades to support freight decision-making.

IHS Transearch was purchased by the Virginia Department of Transportation (VDOT) and distributed to Metropolitan Planning Organizations and Planning District Commissions within the Commonwealth of Virginia. The Virginia dataset includes all commodity flows that travel through the state of Virginia or have origins or destinations of cities/counties in Virginia. The HRTPO obtained the 2012 IHS Transearch data in January 2016.

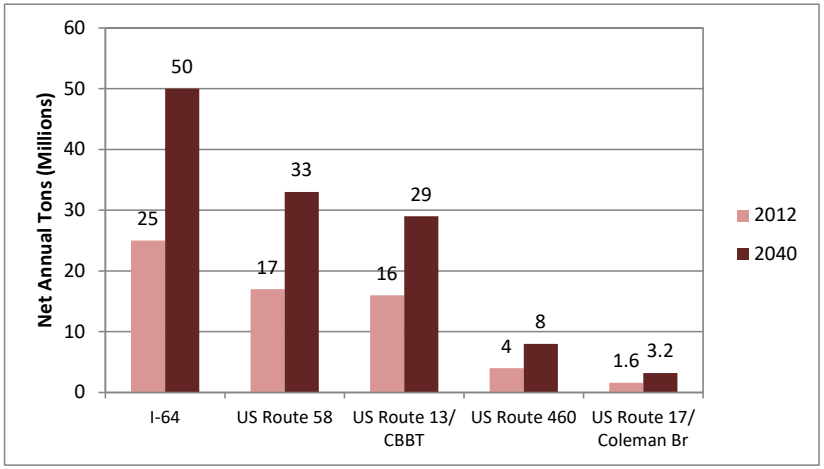


FIGURE 61 – NET ANNUAL TONNAGE CARRIED BY TRUCK AT HAMPTON ROADS REGIONAL GATEWAYS, 2012 AND 2040

Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

FUTURE TRUCK MOVEMENTS THROUGH REGIONAL GATEWAYS

Within the HRTPO's 2017 Regional Freight Study, an analysis was completed that shows the net annual tonnage carried by truck at major regional gateways in 2012 and 2040 (**Figure 61**). In 2012, the highest amount of freight that was moved in Hampton Roads in terms of weight (annual tonnage) was along the I-64 corridor through the Historic Triangle. Freight tonnage along the I-64 corridor is expected to double from 25 to 50 million annual tons from 2012 to 2040. By 2040, the top two primary gateways for freight by annual tonnage are expected to be I-64 and US Route 58. The US Route 17 (Coleman Bridge) gateway between York County and Gloucester County is expected to double from 1.6 to 3.2 million annual tons from 2012 to 2040.

[4] *Hampton Roads Regional Freight Study: 2017 Update*, HRTPO, July 2017.

[5] *Transearch 2012 Modeling Methodology Documentation: Prepared for Virginia DOT*, IHS Inc., May 2014.

Net Annual Tonnage Carried by Truck – Historic Triangle

Maps 36 and 37 on pages 125-126 show the net annual tonnage carried by truck in 2012 and 2040 for primary routes within the Historic Triangle. In addition, **Figure 62** also shows the net annual tonnage and percent change from 2012 to 2040 for specific roadway segments.

Net Annual Dollars Carried by Truck – Historic Triangle

Maps 38 and 39 on pages 127-128 show the net annual dollars carried by truck in 2012 and 2040 for primary routes within the Historic Triangle. In addition, **Figure 63** shows the net annual dollars and percent change from 2012 to 2040 for specific roadway segments.

Locality	Route Num	Facility	Segment From	Segment To	2012 Net Annual Tons	2040 Net Annual Tons	Percent Change
JCC	30	Barhamsville Rd	I-64	Route 60	0.16 M	0.88 M	468%
JCC	5	John Tyler Hwy	Charles City CL	Route 199	0.41 M	1.13 M	176%
JCC	30	Old Stage Rd	New Kent CL	I-64	0.36 M	0.79 M	118%
JCC	60	Pocahontas Trl	Williamsburg CL	York CL @ 199	0.57 M	1.42 M	148%
JCC	60	Richmond Rd	Route 199	Williamsburg CL	0.16 M	0.88 M	468%
JCC	199	Route 199	John Tyler Hwy (Rte 5)	Rte 60/Rte 143/York CL	0.35 M	0.99 M	183%
JCC	60	Route 60	Route 30	Route 199	0.16 M	0.88 M	468%
JCC	64	I-64	New Kent CL	Rte 30	24.98 M	50.44 M	102%
JCC	64	I-64	Rte 30	Croaker Rd (Rte 607)	25.18 M	50.34 M	100%
JCC	64	I-64	Croaker Rd (Rte 607)	York CL	23.06 M	44.92 M	95%
JCC	64	I-64	York CL	Newport News CL	23.99 M	47.33 M	97%
WMB	60	Bypass Rd	Route 132/York CL	York St	0.57 M	1.42 M	148%
WMB	60	Richmond Rd	James City CL	Bypass Rd	0.16 M	0.88 M	468%
WMB	60	York St	Page St	James City CL	0.57 M	1.42 M	148%
YC	60	Bypass Rd	Williamsburg CL	Route 132/Williamsburg CL	0.57 M	1.42 M	148%
YC	105	Fort Eustis Blvd	Newport News CL	Route 17	0.05 M	0.28 M	421%
YC	17	George Washington Hwy	Newport News CL	Hampton Hwy (Rte 134)	0.71 M	1.25 M	76%
YC	17	George Washington Hwy	Hampton Hwy (Rte 134)	Fort Eustis Blvd (Rte 105)	1.47 M	2.87 M	95%
YC	17	George Washington Hwy	Fort Eustis Blvd (Rte 105)	Gloucester CL (Coleman Bridge)	1.60 M	3.20 M	99%
YC	134	Hampton Hwy	Route 17	NCL Hampton	1.05 M	2.06 M	97%
YC	199	Route 199	Rte 60/Rte 143/Jcc Line	I-64	0.92 M	2.41 M	161%
YC	64	I-64	James City CL	Rte 199 (East Of Williamsburg)	23.06 M	44.92 M	95%
YC	64	I-64	Rte 199 (East Of Williamsburg)	James City CL	23.99 M	47.33 M	97%

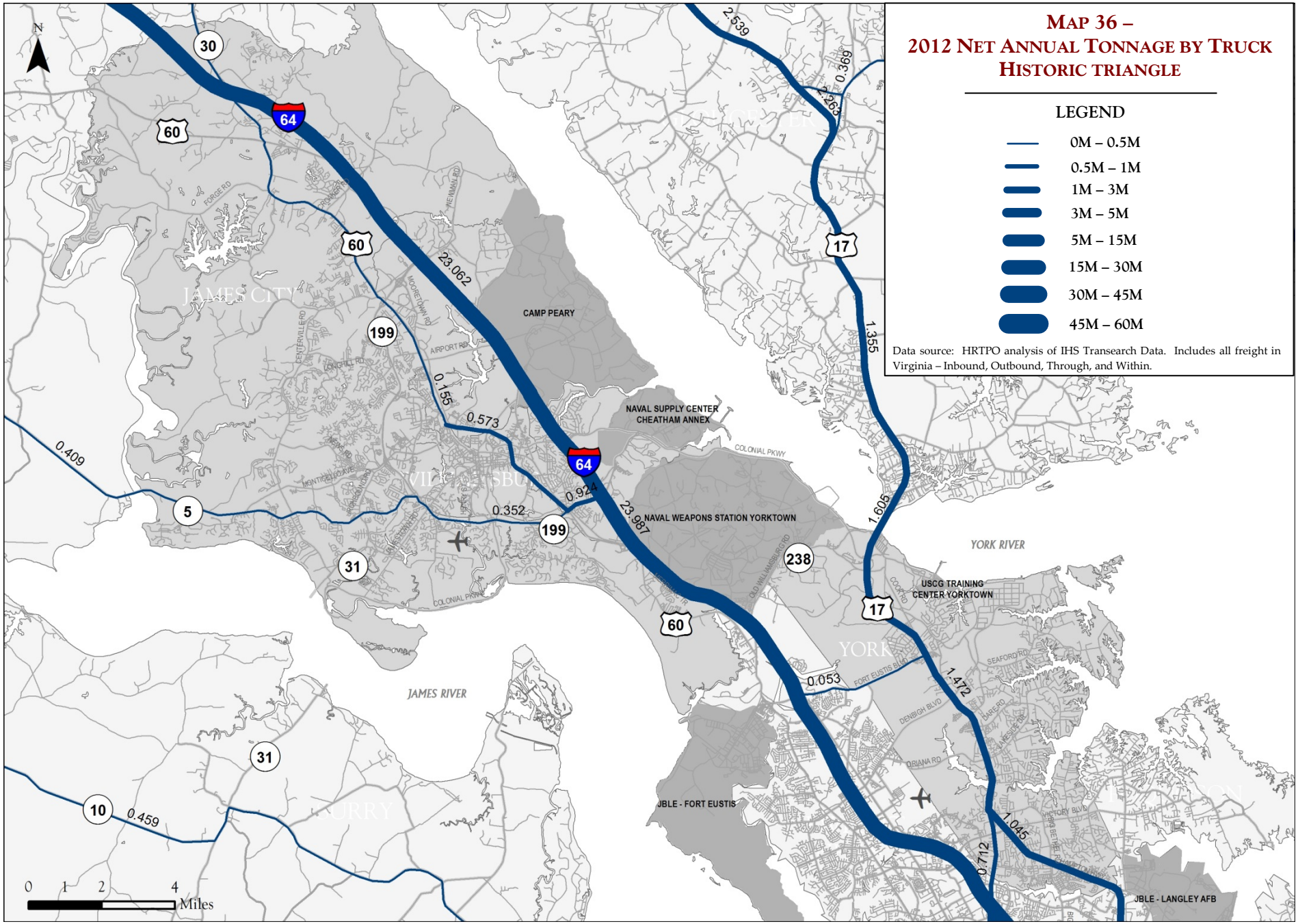
Figure 62 – Net Annual Tonnage Carried by Truck, 2012 and 2040

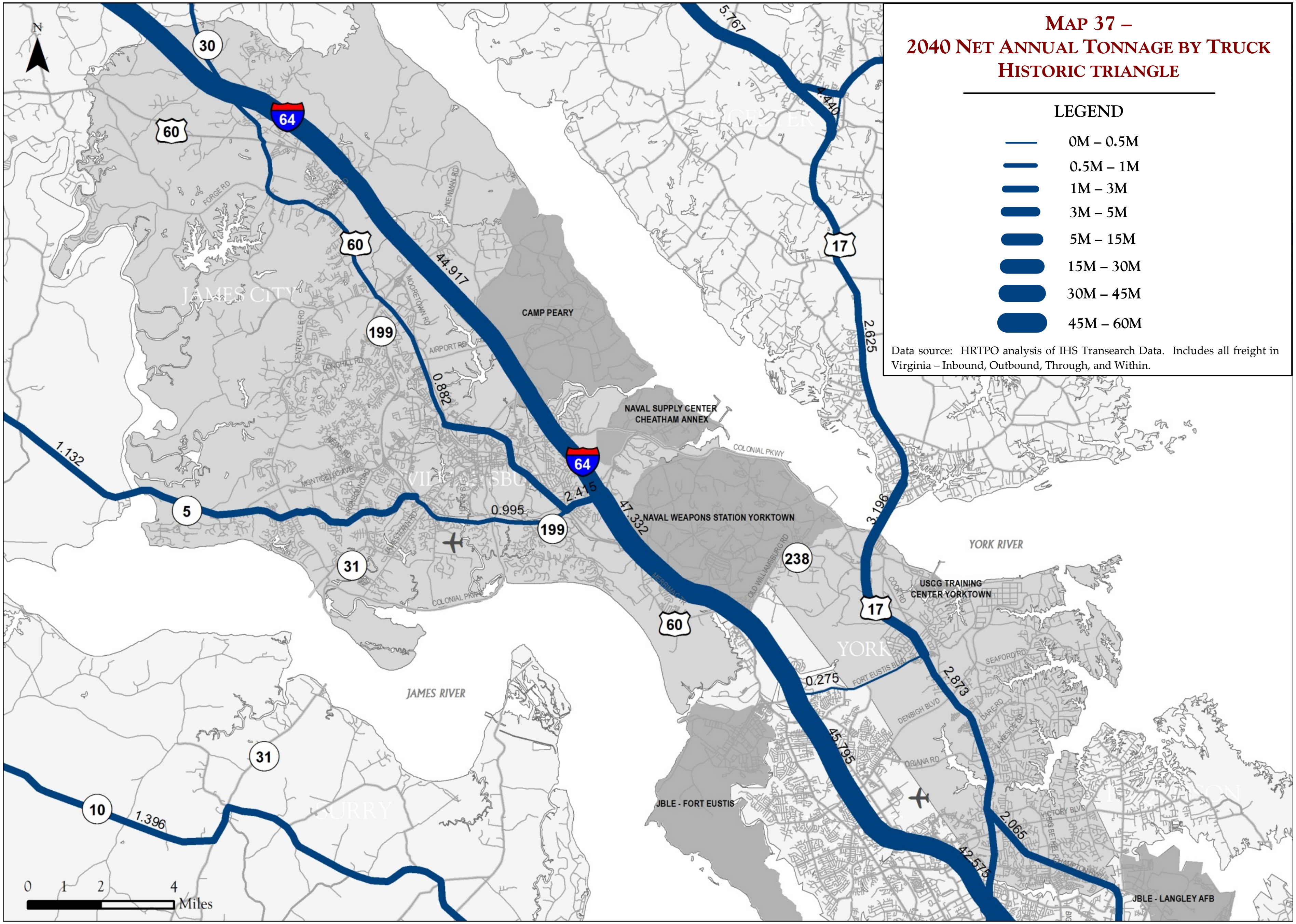
Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

Locality	Route Num	Facility	Segment From	Segment To	2012 Net Annual Dollars	2040 Net Annual Dollars	Percent Change
JCC	30	Barhamsville Rd	I-64	Route 60	$159 M	$231 M	45%
JCC	5	John Tyler Hwy	Charles City CL	Route 199	$319 M	$613 M	92%
JCC	30	Old Stage Rd	New Kent CL	I-64	$77 M	$101 M	31%
JCC	60	Pocahontas Trl	Williamsburg CL	York CL @ 199	$145 M	$264 M	81%
JCC	60	Richmond Rd	Route 199	Williamsburg CL	$159 M	$231 M	45%
JCC	199	Route 199	John Tyler Hwy (Rte 5)	Rte 60/Rte 143/York CL	$433 M	$899 M	108%
JCC	60	Route 60	Route 30	Route 199	$159 M	$231 M	45%
JCC	64	I-64	New Kent CL	Rte 30	$47,236 M	$161,838 M	243%
JCC	64	I-64	Rte 30	Croaker Rd (Rte 607)	$47,154 M	$161,708 M	243%
JCC	64	I-64	Croaker Rd (Rte 607)	York CL	$46,164 M	$160,436 M	248%
JCC	64	I-64	York CL	Newport News CL	$46,742 M	$161,599 M	246%
WMB	60	Bypass Rd	Route 132/York CL	York St	$145 M	$264 M	81%
WMB	60	Richmond Rd	James City CL	Bypass Rd	$159 M	$231 M	45%
WMB	60	York St	Page St	James City CL	$145 M	$264 M	81%
YC	60	Bypass Rd	Williamsburg CL	Route 132/Williamsburg CL	$145 M	$264 M	81%
YC	105	Fort Eustis Blvd	Newport News CL	Route 17	$23 M	$114 M	386%
YC	17	George Washington Hwy	Newport News CL	Hampton Hwy (Rte 134)	$672 M	$914 M	36%
YC	17	George Washington Hwy	Hampton Hwy (Rte 134)	Fort Eustis Blvd (Rte 105)	$1,481 M	$2,905 M	96%
YC	17	George Washington Hwy	Fort Eustis Blvd (Rte 105)	Gloucester CL (Coleman Bridge)	$1,659 M	$3,120 M	88%
YC	134	Hampton Hwy	Route 17	NCL Hampton	$1,164 M	$2,478 M	113%
YC	199	Route 199	Rte 60/Rte 143/Jcc Line	I-64	$578 M	$1,162 M	101%
YC	64	I-64	James City CL	Rte 199 (East Of Williamsburg)	$46,164 M	$160,436 M	248%
YC	64	I-64	Rte 199 (East Of Williamsburg)	James City CL	$46,742 M	$161,599 M	246%

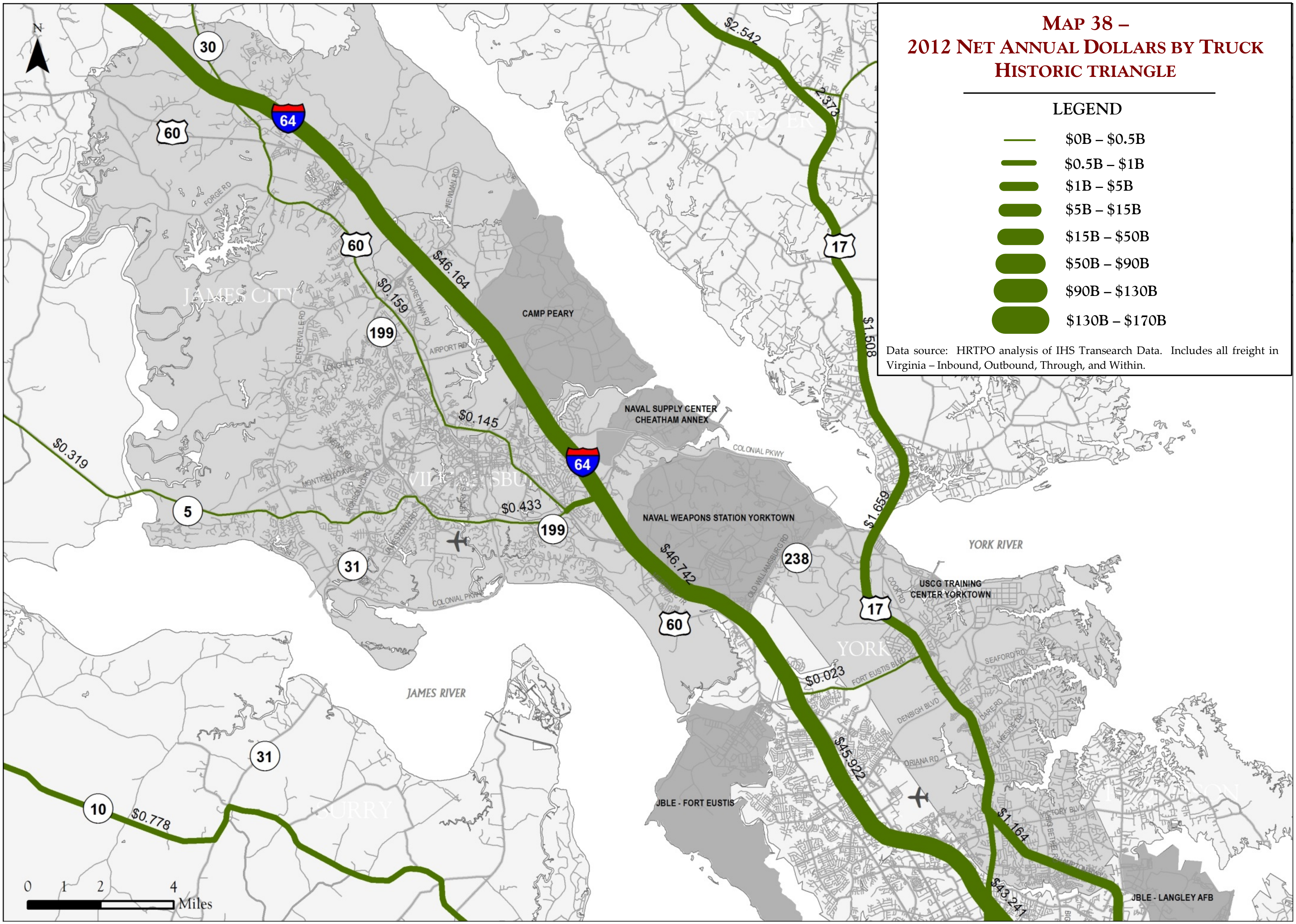
Figure 63 – Net Annual Dollars Carried by Truck, 2012 and 2040

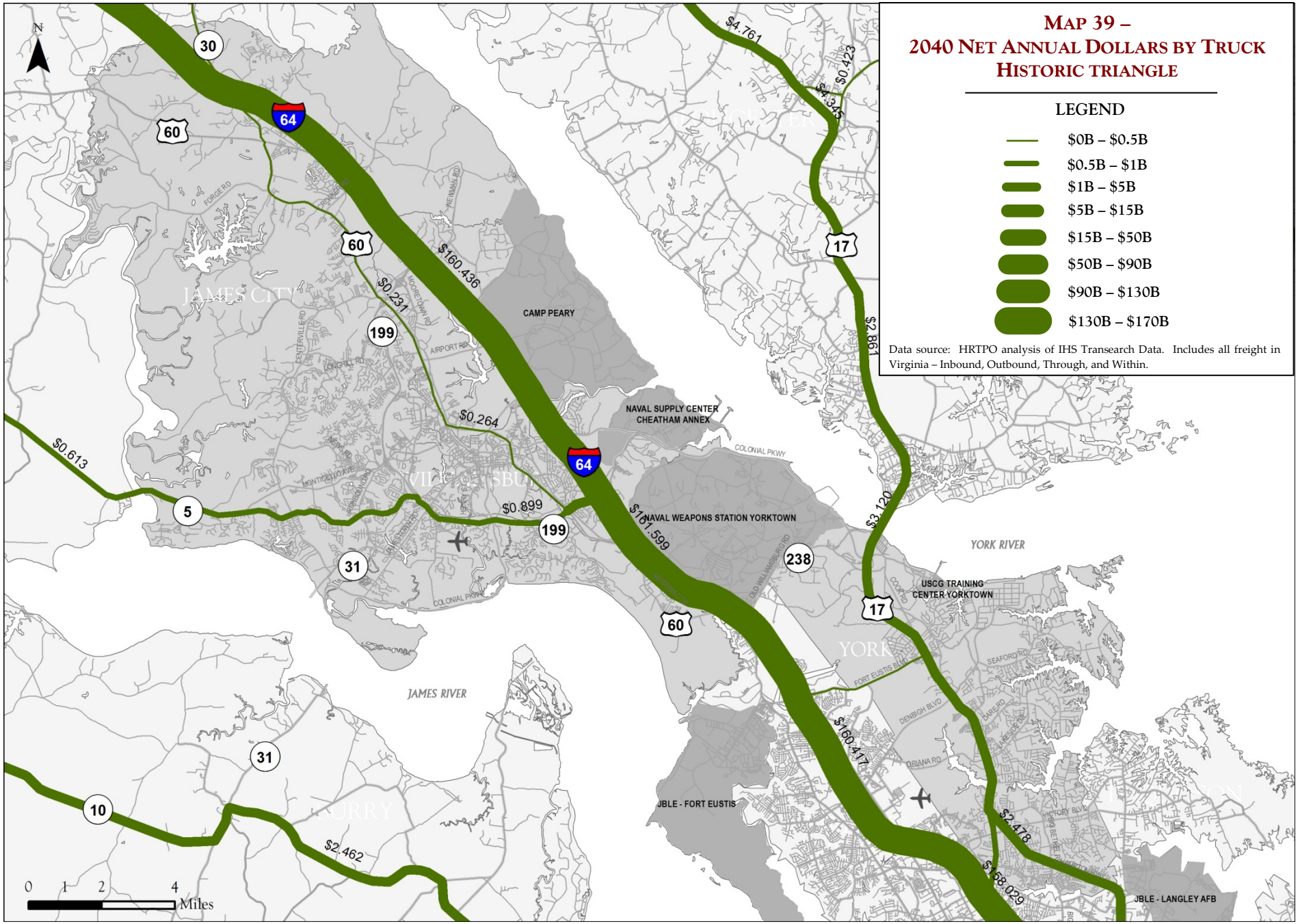
Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.


MAP 36 –
2012 NET ANNUAL TONNAGE BY TRUCK
HISTORIC TRIANGLE
LEGEND
0M – 0.5M
0.5M – 1M
1M – 3M
3M – 5M
5M – 15M
15M – 30M
30M – 45M
45M – 60M
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
YORK RIVER
JAMES RIVER
JAMES CITY
YORK
COLONIAL PKWY
0 1 2 4 Miles



Map 37 – 2040 Net Annual Tonnage by Truck Historic Triangle

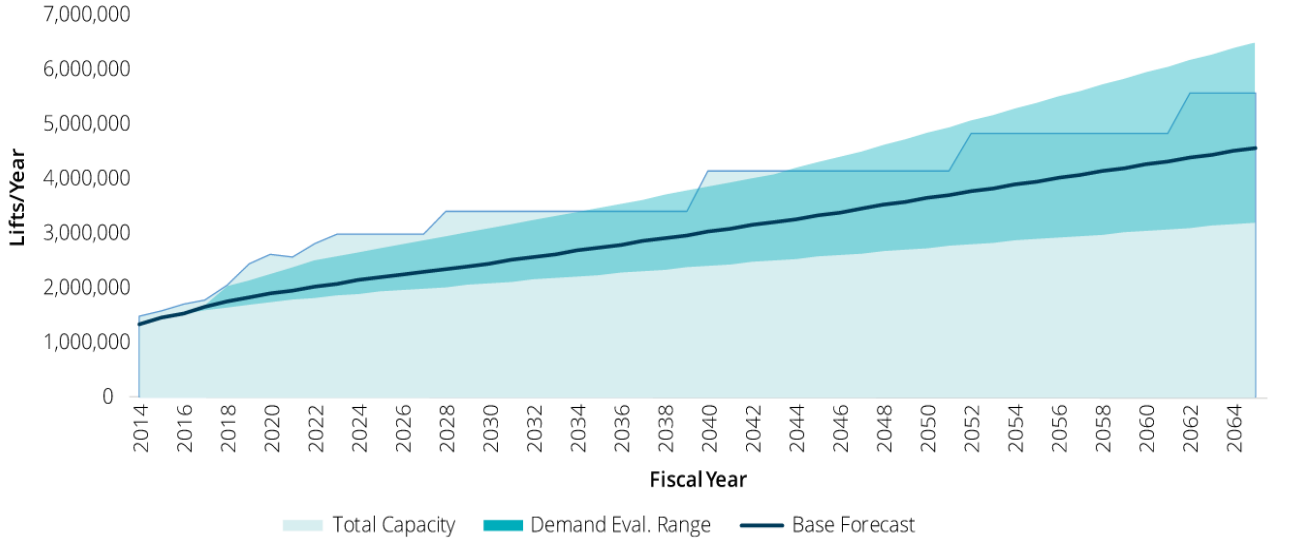

MAP 38 –
2012 NET ANNUAL DOLLARS BY TRUCK
HISTORIC TRIANGLE
LEGEND
$0B – $0.5B
$0.5B – $1B
$1B – $5B
$5B – $15B
$15B – $50B
$50B – $90B
$90B – $130B
$130B – $170B
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
N
$2.542
$46.164
$0.159
$0.145
$0.319
$0.433
$46.742
$1.508
$1.659
$0.023
$45.922
$1.164
$43.241
$0.778
CAMP PEARY
NAVAL SUPPLY CENTER
CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING
CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
YORK RIVER
JAMES RIVER
COLONIAL PKWY
0 1 2 4
Miles


MAP 39 –
2040 NET ANNUAL DOLLARS BY TRUCK
HISTORIC TRIANGLE
LEGEND
$0B – $0.5B
$0.5B – $1B
$1B – $5B
$5B – $15B
$15B – $50B
$50B – $90B
$90B – $130B
$130B – $170B
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
$160.436
$0.231
$0.264
$0.613
$0.899
$161.599
$160.417
$2.462
$4.761
$0.423
$4.345
$2.861
$3.120
$2.478
$58.029
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
JAMES CITY
YORK
0 1 2 4 Miles

Port of Virginia Master Plan

In anticipation of future freight growth, the Port of Virginia (POV) has developed a 2065 Master Plan. This plan integrates these growth opportunities into updated demand forecasts and aligns the port's capital improvement project schedules to enable the port to handle it.

Figure 64 shows the number of lifts at the Port of Virginia facilities forecasted through 2065. Demand at port facilities could outpace capacity if demand is at the higher end of the projected range. To address the growing need for additional capacity, the light blue line shows significant capacity improvements occurring in 2028, 2040, 2052, and 2062— based on the anticipated construction of Craney Island Marine Terminal Phases 1-4. As volumes increase at the Port of Virginia, higher growth in truck volumes can be expected along the I-64 corridor in the Historic Triangle, especially to and from distribution centers.



*A lift is a paid movement of a container onto or off a vessel.

Figure 64 – Projected Lifts* per Year at the Port of Virginia Facilities by Fiscal Year

Source: Port of Virginia 2065 Master Plan.

Future Conditions – Air Travel

The primary commercial passenger service airports for the Historic Triangle are still expected to remain the same over the next couple of decades. Newport News-Williamsburg International Airport (PHF) is the closest option with Norfolk International Airport (ORF) and Richmond International Airport (RIC) providing additional options. Regional passenger air travel growth has remained relatively flat over the last 10-15 years and is expected to gradually increase with population growth in the region.

This section highlights the current Master Plans for each of the commercial service airports listed above.

Newport News-Williamsburg International Airport Master Plan

The Peninsula Airport Commission prepared an update to the Newport News-Williamsburg International Airport Master Plan in 2014.

Multiple growth scenarios were included in the plan, ranging from 535,000 to 620,000 enplaned passengers per year in 2017 to 622,000 to 1,092,000 enplaned passengers per year in 2032. It needs to be noted that these scenarios were made prior to the loss of AirTran Airways in 2012, which has resulted in a reduction of passenger levels from the peak of 531,000 enplanements in 2011 to around 200,000 enplanements in 2017.

The Master Plan includes a number of projects related to improving the airport's safety, capacity, and sustainability in the short-term, intermediate-term, and long-term. Projects include terminal expansion, airport roadway improvements, and upgrades to runways, taxiways, and apron access. The combined cost of the 33 capital projects included in the Plan is $163 million. More information on these projects is available at https://flyphf.com/about-phf/project-green-skies.

Norfolk International Airport Master Plan

The current Norfolk International Airport Master Plan was produced in 2008. The 2008 Master Plan anticipates significant growth at the airport, and plans for accommodating this growth by closing the current cross wind runway and adding a runway parallel to the existing primary one. The Plan also recommends improvements to baggage areas, concourses, security checkpoints, and rental car areas, many of which have occurred over the last few years.

The Norfolk Airport Authority is currently updating the Norfolk International Airport Master Plan. The airport inventory and forecast of the airport's demand have been completed as of April 2019. The Master Plan will have growth scenarios ranging from 2.4 million to 3.2 million enplanements by the year 2038, up from 1.7 million enplanements in 2017. The Plan also estimates 3,600 operations and 178,000 tons of cargo handled in 2038, up from 2,400 operations and 120,000 tons of cargo handled in 2017.

The Norfolk International Airport Master Plan update is expected to be complete in 2019. More information is available at http://orfmasterplan.com.

Richmond International Airport Master Plan

The Capital Region Airport Commission updated the Richmond International Airport Master Plan in 2009. The Master Plan includes recommendations for improvements in order to meet anticipated demand through 2026. The plan forecasts passenger enplanements

to increase to between 2.5 million and 3.5 million passengers by 2026. Air cargo is expected to grow approximately 3.5% per year and general aviation operations are expected to increase at 2.5% per year out to 2026. More information on the current Richmond International Airport Master Plan is available at https://flyrichmond.com/economic-impact.

The airport has undergone many changes in recent years, including a new terminal, a new air traffic control tower, an increase in the total number of gates, widened security checkpoints, new parking garages, and new terminal roadways. Access to the airport was also improved by the completion of the Airport Connector to the Pocahontas Parkway (Route 895) in 2011.

Work is currently underway to expand Concourse A by six gates, matching the current number of gates in Concourse B. Plans are also in the works to expand the Concourse B security checkpoint, North Parking Garage, and the rental car garage.

Richmond International Airport

Future Conditions – Resiliency and Sea Level Rise

Extreme flooding events currently disrupt transportation networks and will likely become more prevalent as sea levels are expected to rise at an accelerated pace for many coastal regions, such as Hampton Roads. Hampton Roads—second only to New Orleans in terms of vulnerability to sea level rise in the United States—is seeing more frequent storm surges and higher tides than before[6]. Based on past storm events, Hampton Roads' east coast location makes it prone to significant storm surges about every four to five years.

Sea level rise will cause significant impacts to coastal regions. Some areas are already experiencing permanent inundation, while other areas are seeing more frequent flooding. As sea levels continue to rise, some areas that have not seen flooding will start to experience it, which will have major infrastructure impacts.

Historic Triangle localities will be required to address sea level rise as part of their comprehensive plans under new state legislation. On March 16, 2015, Governor McAuliffe signed Senate Bill (SB) 1443, which amended the Code of Virginia by adding section 15.2-2223.3 for comprehensive plans to incorporate strategies to combat sea-level rise and recurrent flooding:

> "Beginning July 1, 2015, any locality included in the Hampton Roads Planning District Commission shall incorporate into the next scheduled and all subsequent reviews of its comprehensive plan strategies to combat projected relative sea-level rise and recurrent flooding. Such review shall be coordinated with the other localities in the Hampton Roads Planning District Commission."

[6] *Virginia Conservation Network website*, "Confronting Climate Change" webpage, www.vcnva.org, April 2013.

HRTPO Study

HRTPO staff partnered with Hampton Roads Planning District Commission (HRPDC) staff in 2016 to conduct a GIS-based flooding vulnerability analysis for potential sea level rise and storm surge impacts to regional roadways by 2045 (next Long-Range Transportation Plan horizon year). The study[7] was approved by the HRTPO Board in 2016 and contains potential flooding scenarios for Hampton Roads localities, including the Historic Triangle. Identification of flood prone areas and addressing problems with mitigation strategies will help communities in the region to become more resilient to extreme weather and climate impacts.

Given the uncertainty in how much relative sea level rise (SLR) will occur over time, research suggested that 2.0 feet of rise could occur in Hampton Roads sometime between 2043 and 2083. With the forecast year of the next HRTPO Long-Range Transportation Plan being 2045, a 2.0 foot relative sea level rise scenario was conservatively used in this analysis.

The three scenarios used in the flooding vulnerability analysis were as follows:

Scenario 1: 2.0 foot relative sea level rise

Scenario 2: 2.0 foot relative sea level rise + 25-year storm surge

Scenario 3: 2.0 foot relative sea level rise + 50-year storm surge

In October 2018, the HRPDC adopted a resolution[8] that recommended local governments adopt policies to incorporate sea level rise into planning and engineering decisions. The resolution recommends using 1.5 feet of relative sea level rise above current

[7] *Sea Level Rise and Storm Surge Impacts to Roadways in Hampton Roads*, HRTPO, May 2016.

[8] *Hampton Roads Planning District Commission Resolution 2018-01*, Resolution Encouraging Local Governments in Hampton Roads to consider Adopting Policies to Incorporate Sea Level Rise into Planning and Engineering Decisions, October 2018.

mean higher high water[9] (MHHW) for near-term (2018-2050) planning, 3 feet of relative sea level rise above current MHHW for mid-term (2050-2080) planning, and 4.5 feet of relative sea level rise above MHHW for long-term (2080-2100) planning. Given that the HRTPO study already included a comprehensive analysis with 2.0 feet of relative sea level rise, the flooding vulnerability analysis for this study was not redone for 1.5 feet. A 2.0 foot relative sea level rise scenario captures all of the potentially flooded roadways under the 1.5 foot relative sea level rise scenario for the near-term. It is important to note that this analysis does not include a mid-term (2050-2080) or long-term (2080-2100) planning horizon, where 3 feet and 4.5 feet of relative sea level rise above MHHW would need to be used.

Map 40 on page 134 shows the potential submergence of roadways by 2045 in the Historic Triangle. **Maps 41 and 42** on pages 135-136 show a closer view of the results for the Jamestown area in James City County and for the southeastern part of York County.

Based on HRTPO's analysis, the following roadways are projected to be impacted by flooding by 2045:

James City County

- Colonial Parkway (Scenarios 1, 2, and 3)
- Jamestown area local roads (Scenarios 1, 2, and 3)
- Jamestown Road (Scenarios 2 and 3)

City of Williamsburg

- No roadway flooding

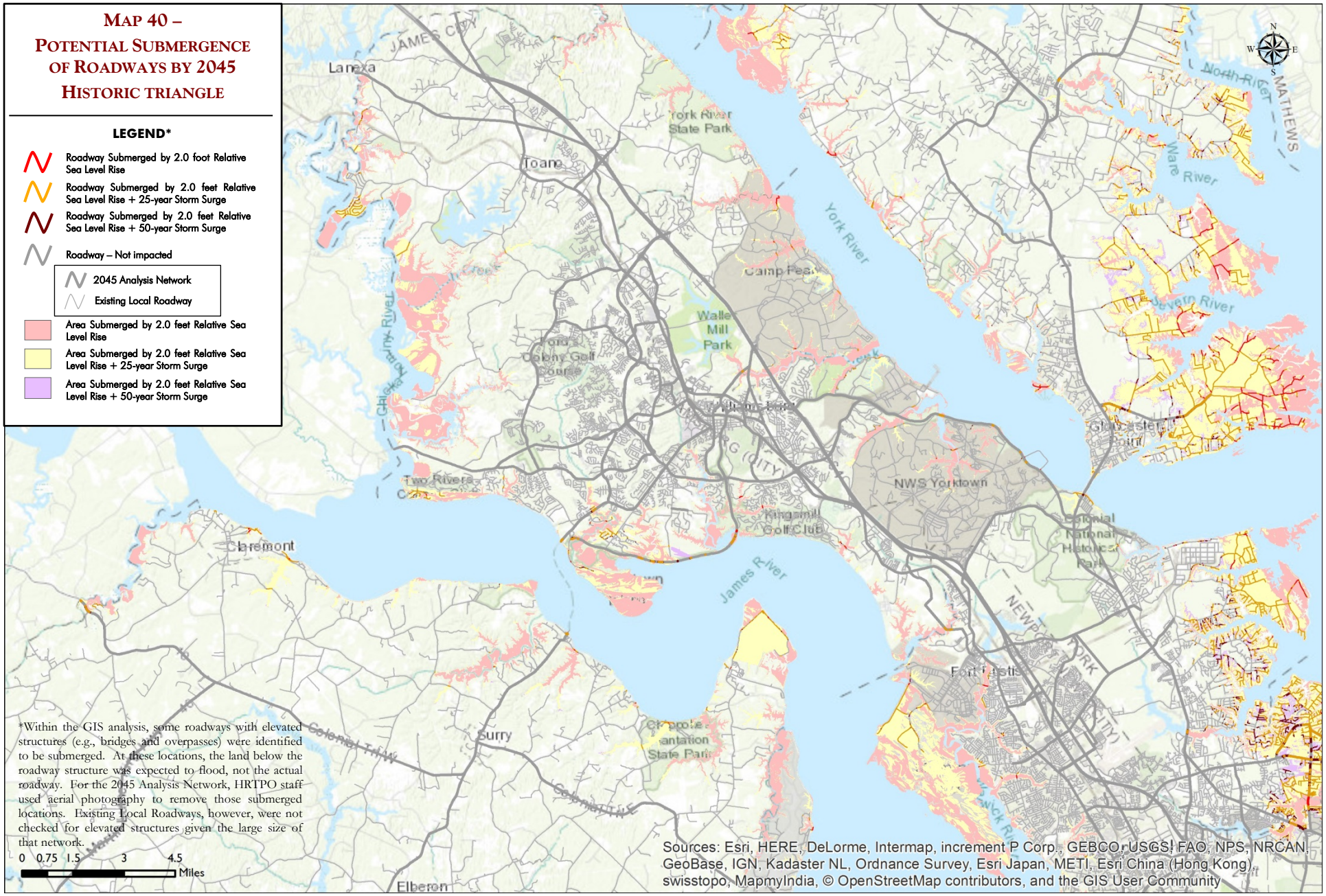
York County

- East Yorktown Road (Scenarios 2 and 3)
- George Washington Memorial Highway (Route 17) near Harwoods Mill Reservoir (Scenarios 2 and 3)
- Hampton Highway near Hampton City line (Scenarios 2 and 3)
- Seaford area local roads (Scenarios 1, 2 and 3)
- Victory Boulevard near Poquoson City line (Scenarios 2 and 3)

Flood Prone Area along Colonial Parkway near College Creek Beach in James City County

[9] Mean Higher High Water (MHHW) – The average of the higher high water height of each tidal day observed over the National Datum Epoch (Source: NOAA Tidal Datums).

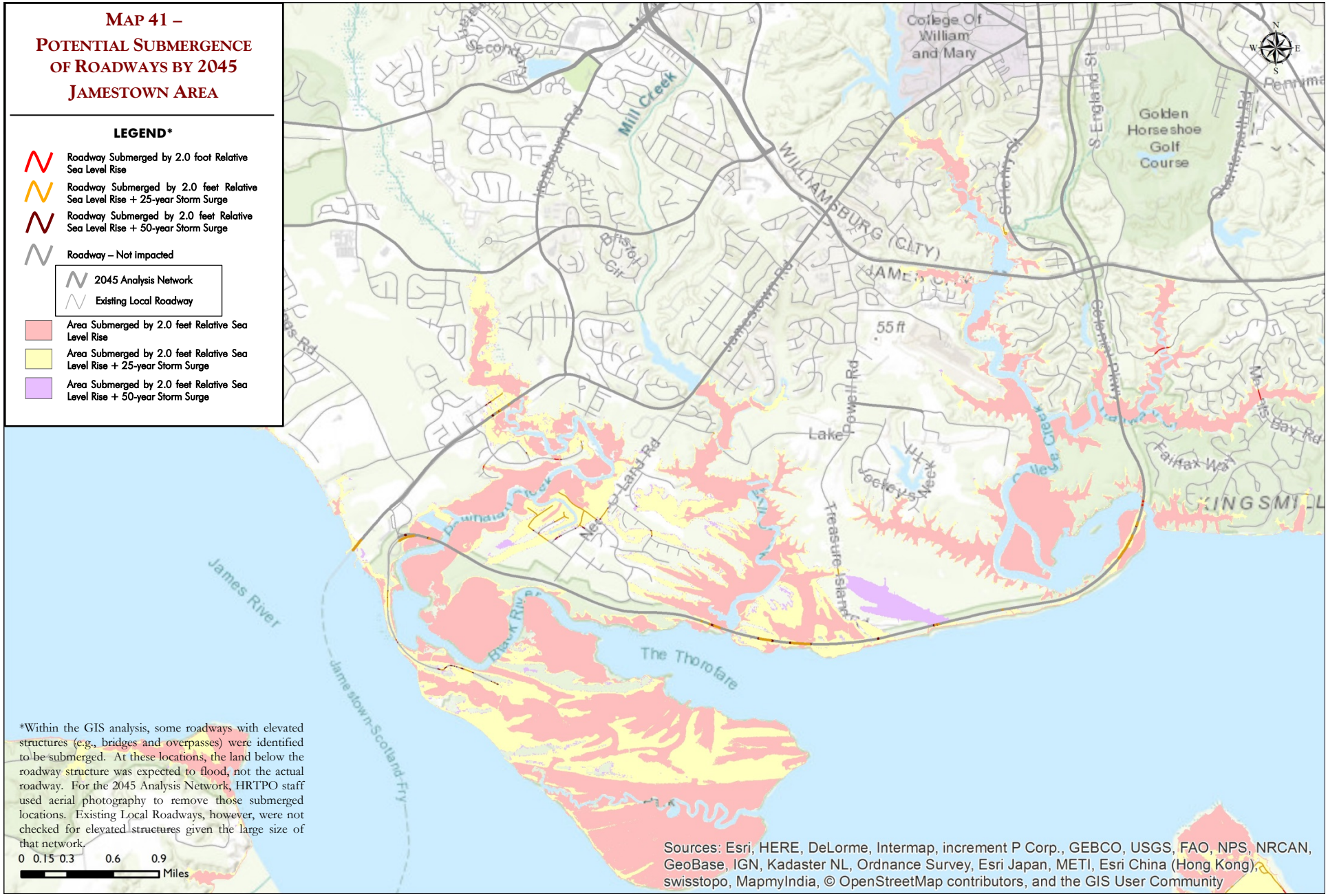
MAP 40 – POTENTIAL SUBMERGENCE OF ROADWAYS BY 2045 HISTORIC TRIANGLE



Prepared by: HRTPO Staff, October 2015

Data source for projected flooded areas: HRPDC Staff, October 2015

Map 41 – Potential Submergence of Roadways by 2045 Jamestown Area

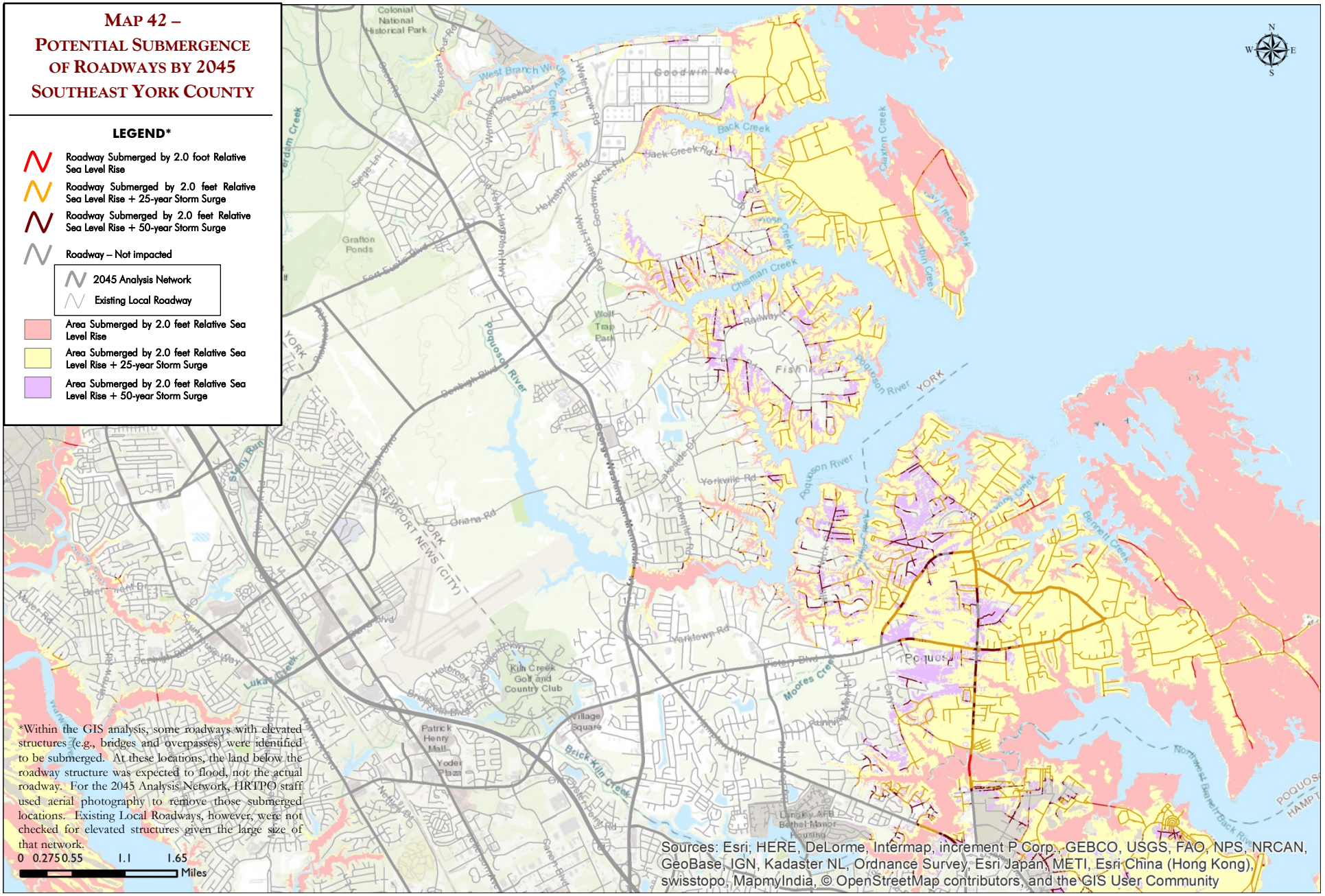


*Within the GIS analysis, some roadways with elevated structures (e.g., bridges and overpasses) were identified to be submerged. At these locations, the land below the roadway structure was expected to flood, not the actual roadway. For the 2045 Analysis Network, HRTPO staff used aerial photography to remove those submerged locations. Existing Local Roadways, however, were not checked for elevated structures given the large size of that network.

Prepared by: HRTPO Staff, October 2015

Data source for projected flooded areas: HRPDC Staff, October 2015

MAP 42 – POTENTIAL SUBMERGENCE OF ROADWAYS BY 2045 SOUTHEAST YORK COUNTY



Prepared by: HRTPO Staff, October 2015

Data source for projected flooded areas: HRPDC Staff, October 2015

Public Review and Comments

As part of the Hampton Roads Transportation Planning Organization's (HRTPO) efforts to provide opportunities for the public to review and comment on this draft report prior to the final product being published, a 2-week public comment period was provided. The public review period for the draft version of this study was conducted from April 27, 2020 through May 18, 2020. No public comments were received.

HISTORIC TRIANGLE COMPREHENSIVE TRANSPORTATION STUDY

APPENDICES

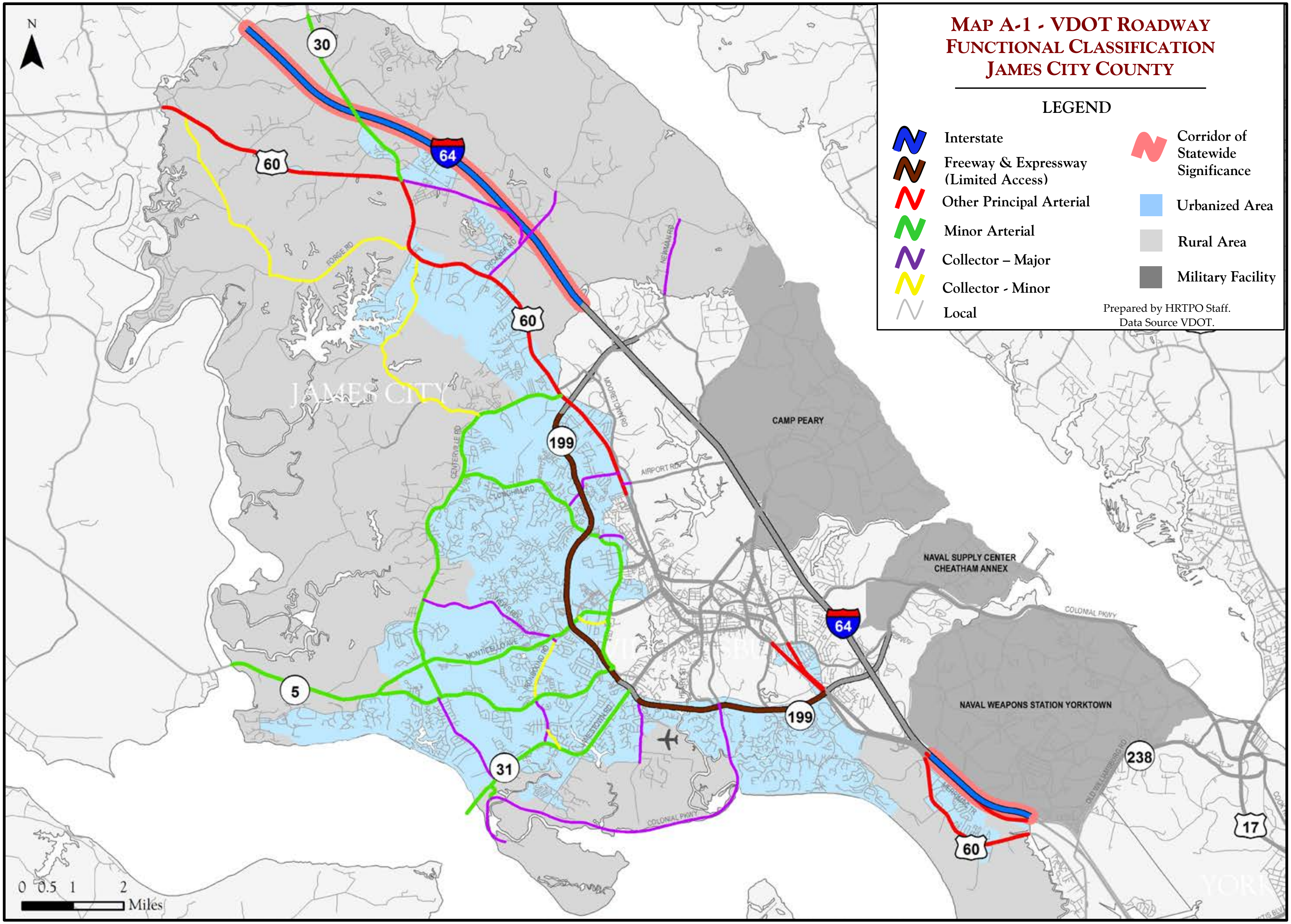
PREPARED BY:

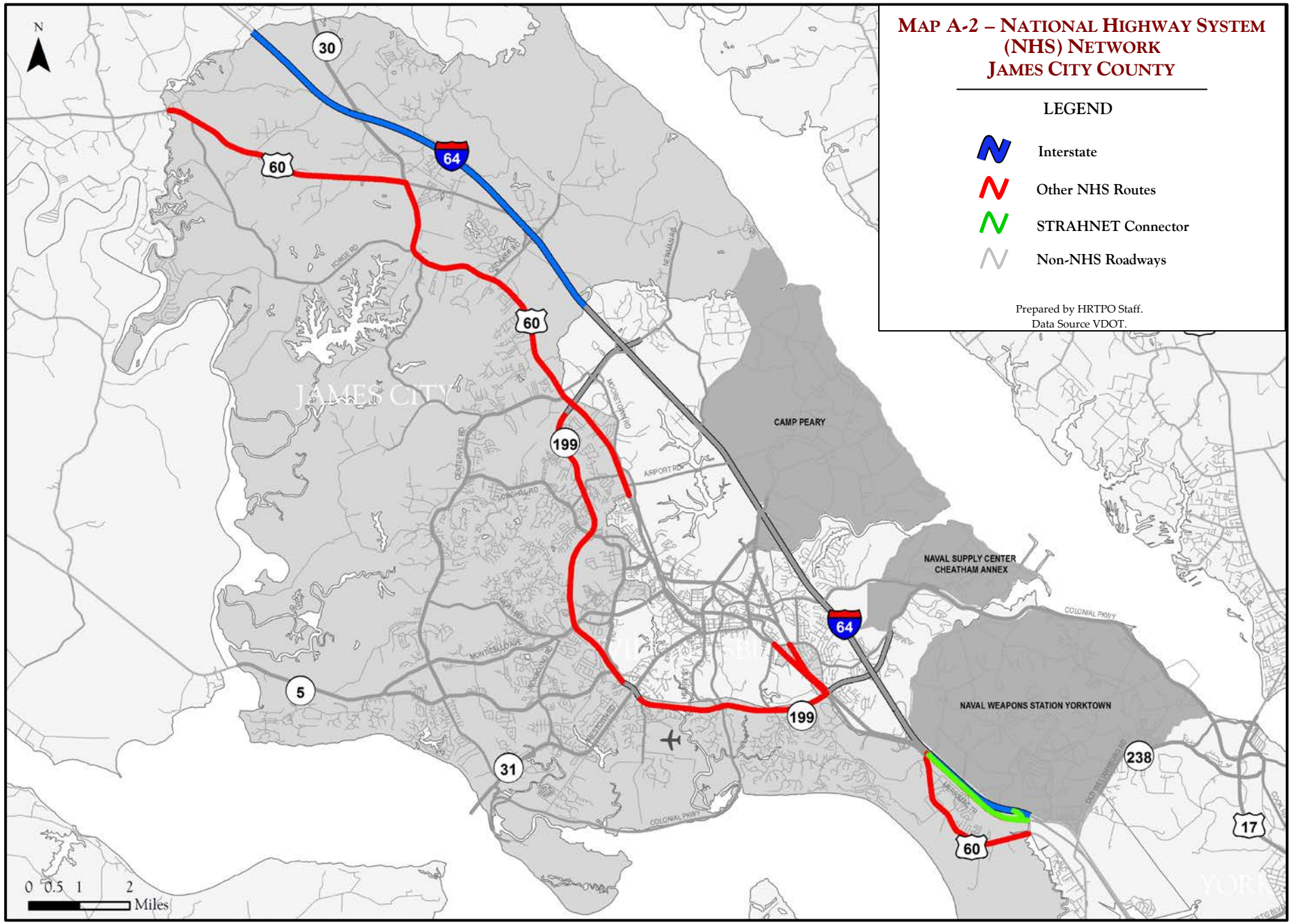
the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

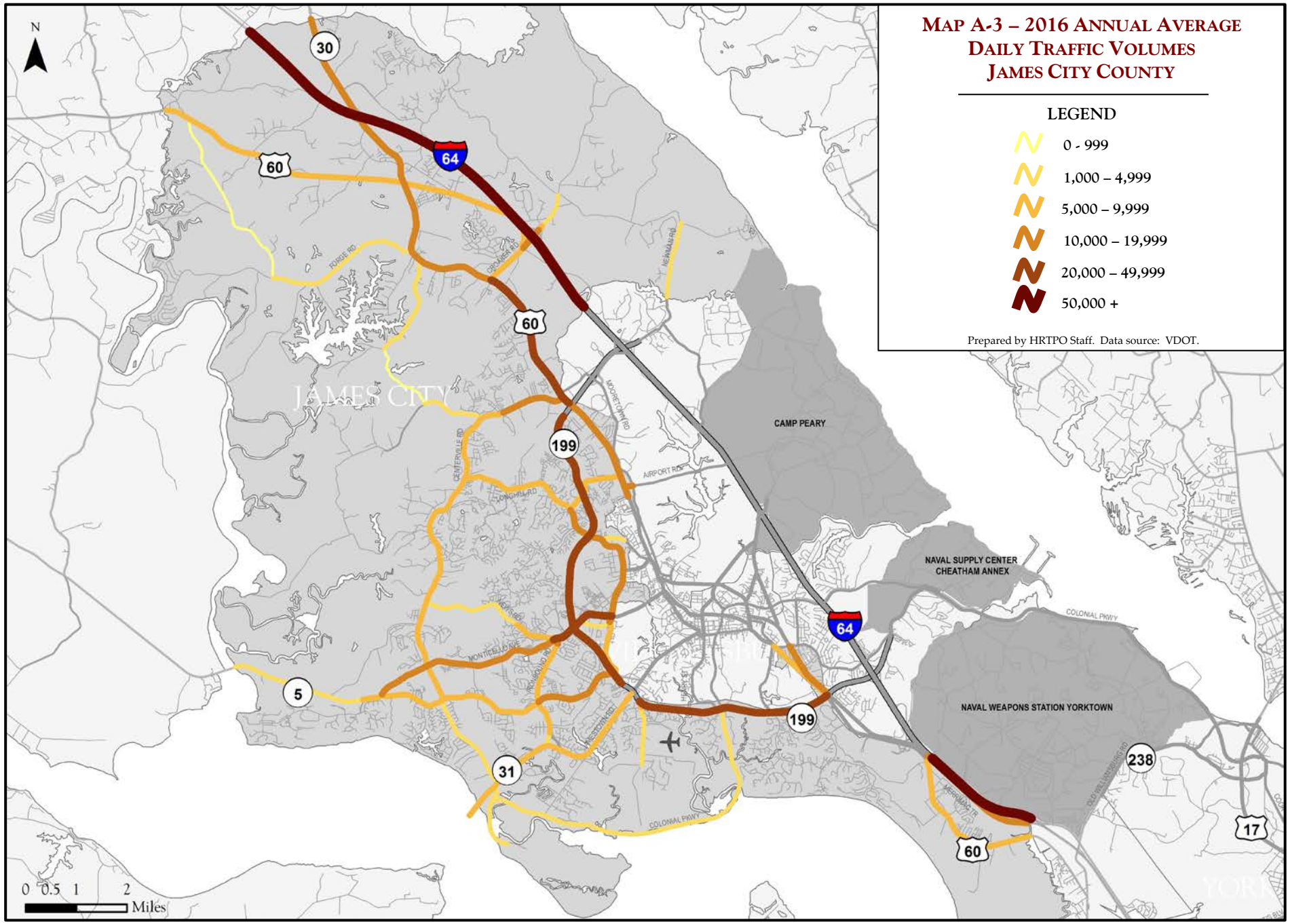
Table of Contents

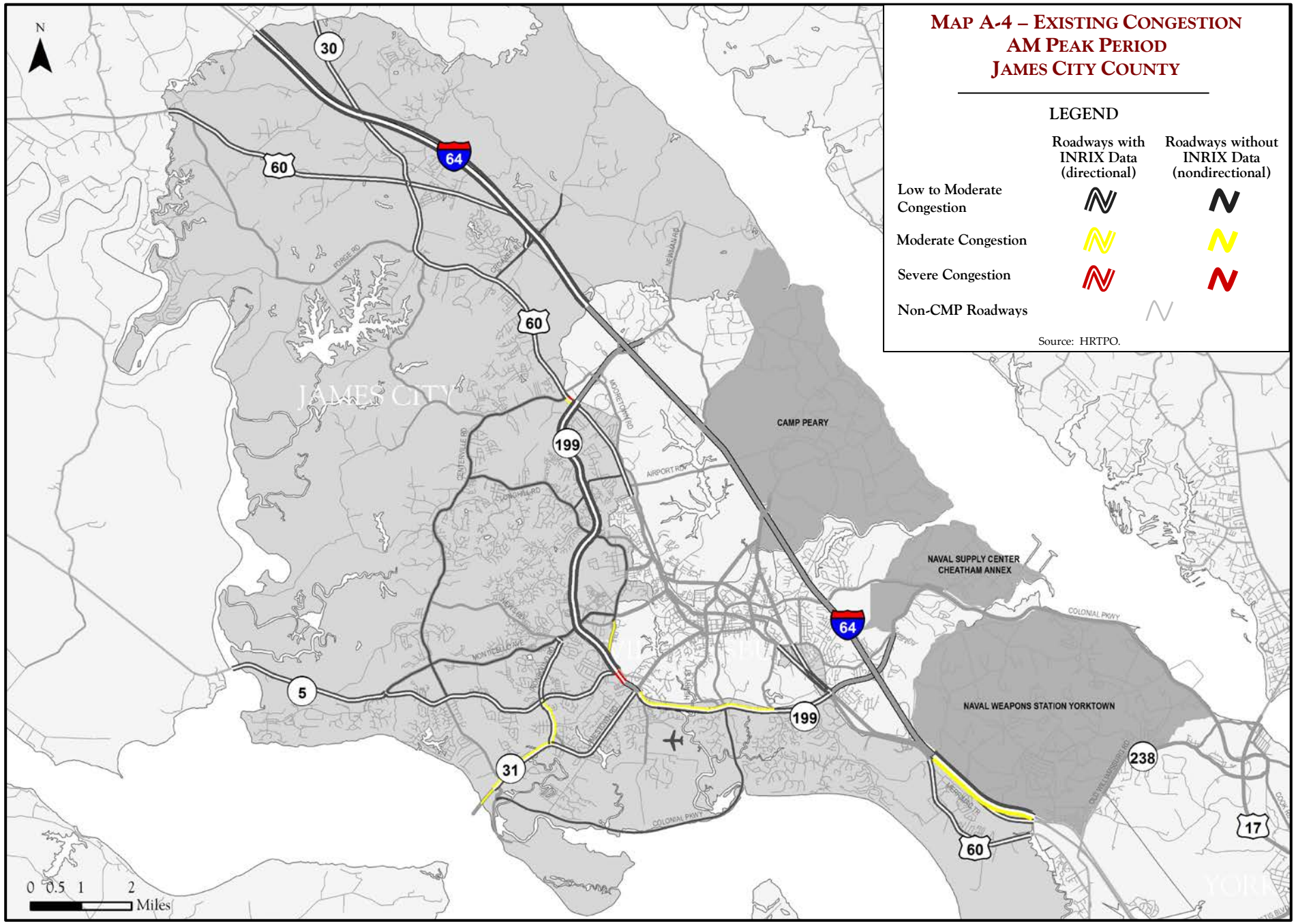
Individual Maps by Jurisdiction

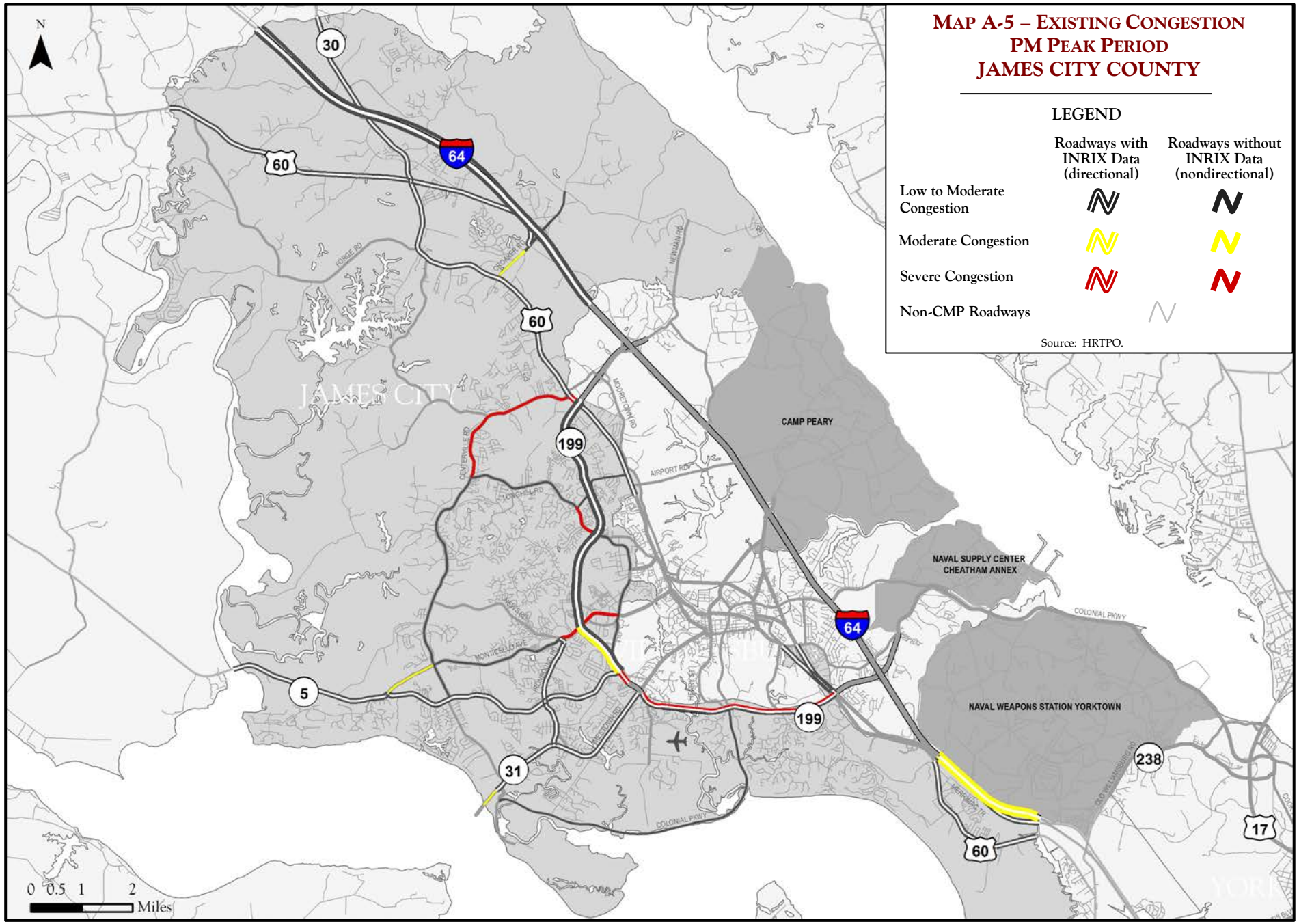
This section provides individual maps from the Historic Triangle Comprehensive Plan Transportation Study for James City County (Appendix A), City of Williamsburg (Appendix B), and York County (Appendix C)

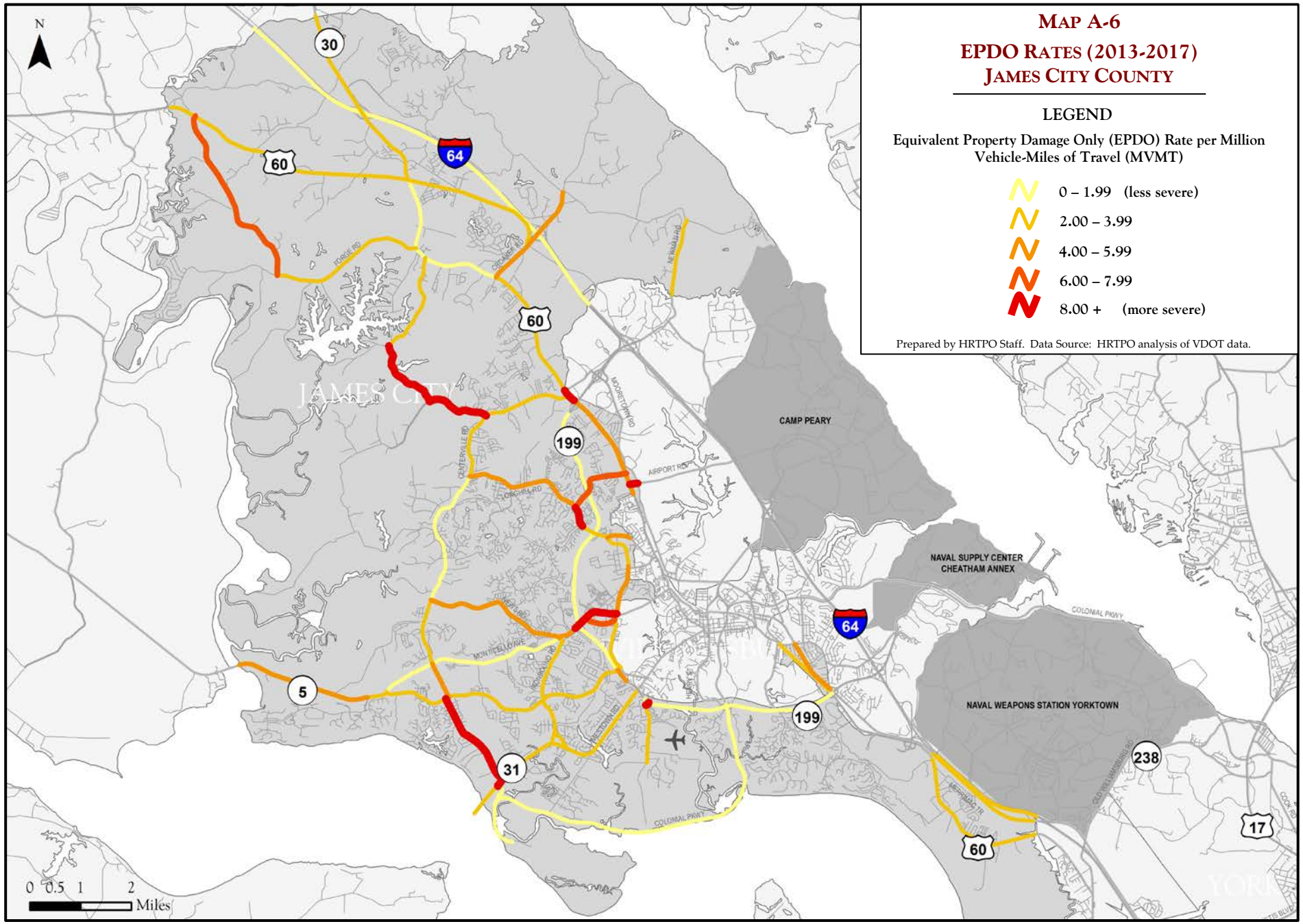

MAP A-1 - VDOT ROADWAY FUNCTIONAL CLASSIFICATION JAMES CITY COUNTY
LEGEND
Interstate
Freeway & Expressway (Limited Access)
Other Principal Arterial
Minor Arterial
Collector – Major
Collector - Minor
Local
Corridor of Statewide Significance
Urbanized Area
Rural Area
Military Facility
Prepared by HRTPO Staff. Data Source VDOT.
JAMES CITY
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
COLONIAL PKWY
AIRPORT RD
30
64
60
199
5
31
238
17
0 0.5 1 2 Miles
N


MAP A-2 – NATIONAL HIGHWAY SYSTEM (NHS) NETWORK
JAMES CITY COUNTY
LEGEND
Interstate
Other NHS Routes
STRAHNET Connector
Non-NHS Roadways
Prepared by HRTPO Staff.
Data Source VDOT.
N
30
60
64
199
5
31
238
17
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JAMES CITY
YORK
0 0.5 1 2
Miles


MAP A-3 – 2016 ANNUAL AVERAGE DAILY TRAFFIC VOLUMES JAMES CITY COUNTY
LEGEND
0 - 999
1,000 – 4,999
5,000 – 9,999
10,000 – 19,999
20,000 – 49,999
50,000 +
Prepared by HRTPO Staff. Data source: VDOT.
N
JAMES CITY
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
YORK
30
60
64
199
5
31
238
17
FORGE RD
CROAKER RD
NEWMAN RD
MOORETOWN RD
AIRPORT RD
CENTERVILLE RD
LONGHILL RD
MONTICELLO AVE
RICHMOND RD
HISTORIC RTE
COLONIAL PKWY
MERRIMAC TR
0 0.5 1 2
Miles


MAP A-4 – EXISTING CONGESTION
AM PEAK PERIOD
JAMES CITY COUNTY
LEGEND
Roadways with INRIX Data (directional)
Roadways without INRIX Data (nondirectional)
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
N
0 0.5 1 2
Miles
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JAMES CITY
YORK
30
60
64
199
5
31
238
17


MAP A-5 – EXISTING CONGESTION
PM PEAK PERIOD
JAMES CITY COUNTY
LEGEND
Roadways with INRIX Data (directional)
Roadways without INRIX Data (nondirectional)
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
N
0 0.5 1 2
Miles
JAMES CITY
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
30
60
64
199
5
31
238
17



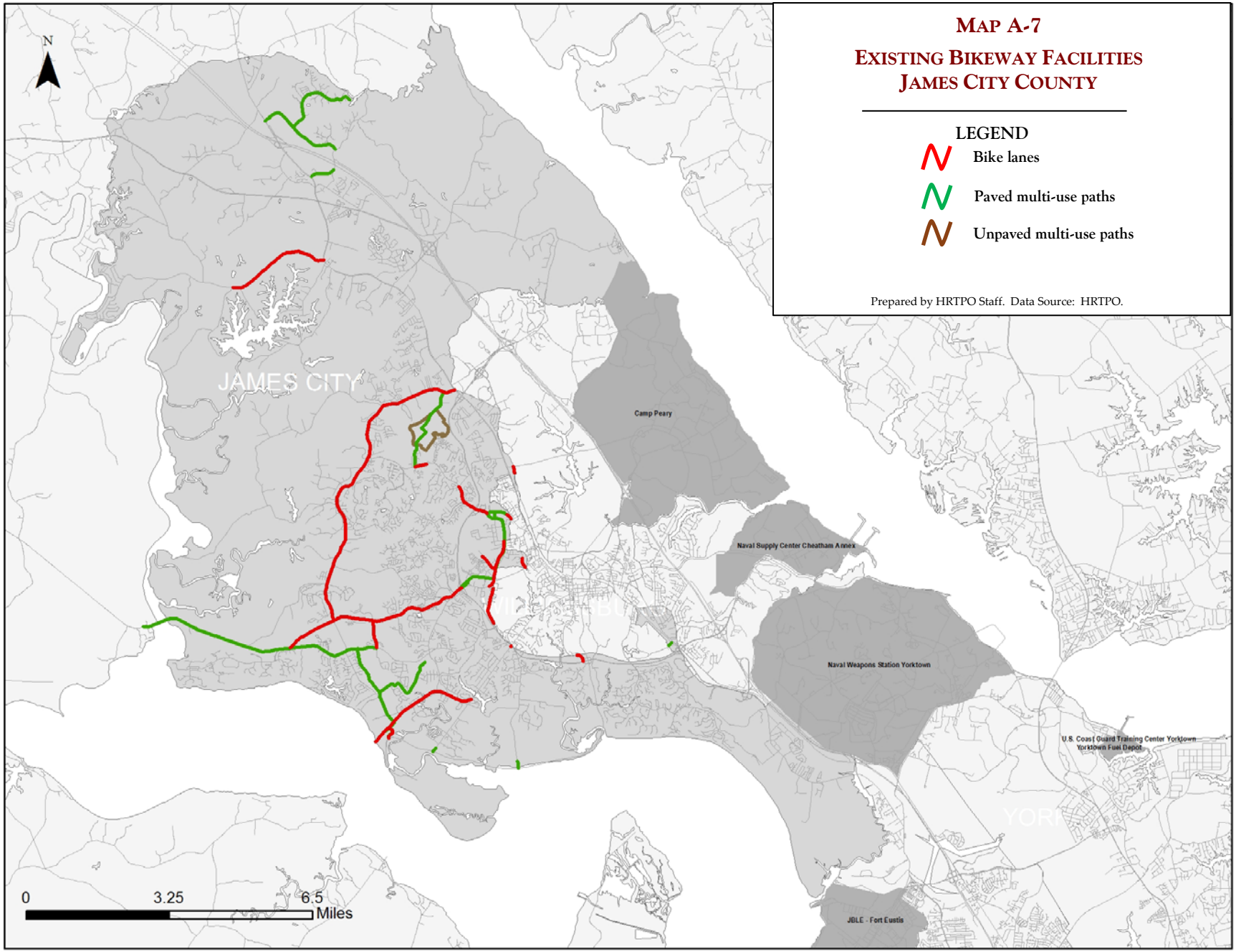
MAP A-6
EPDO RATES (2013-2017)
JAMES CITY COUNTY

LEGEND

Equivalent Property Damage Only (EPDO) Rate per Million Vehicle-Miles of Travel (MVMT)

- 0 – 1.99 (less severe)
- 2.00 – 3.99
- 4.00 – 5.99
- 6.00 – 7.99
- 8.00 + (more severe)

Prepared by HRTPO Staff. Data Source: HRTPO analysis of VDOT data.

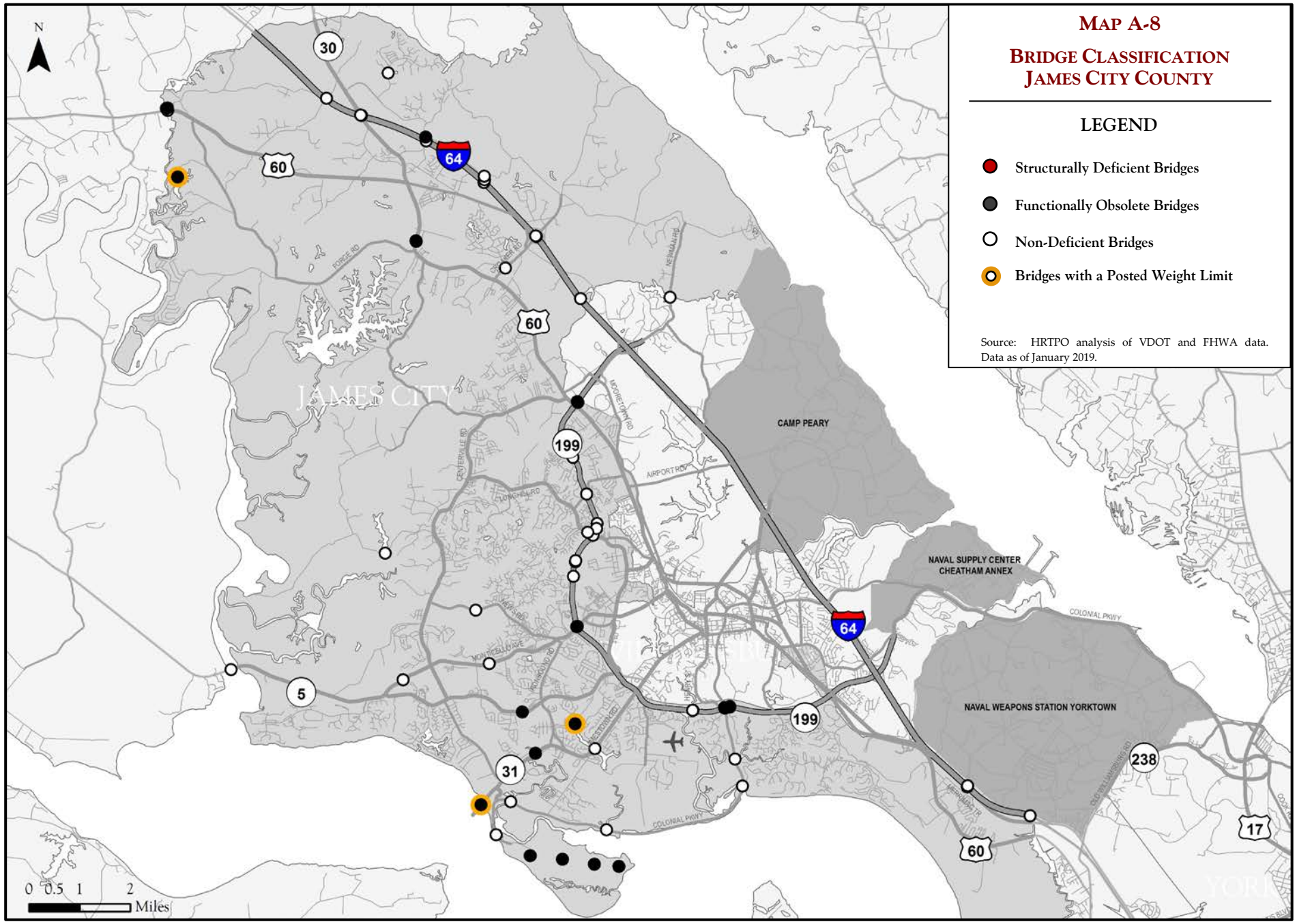


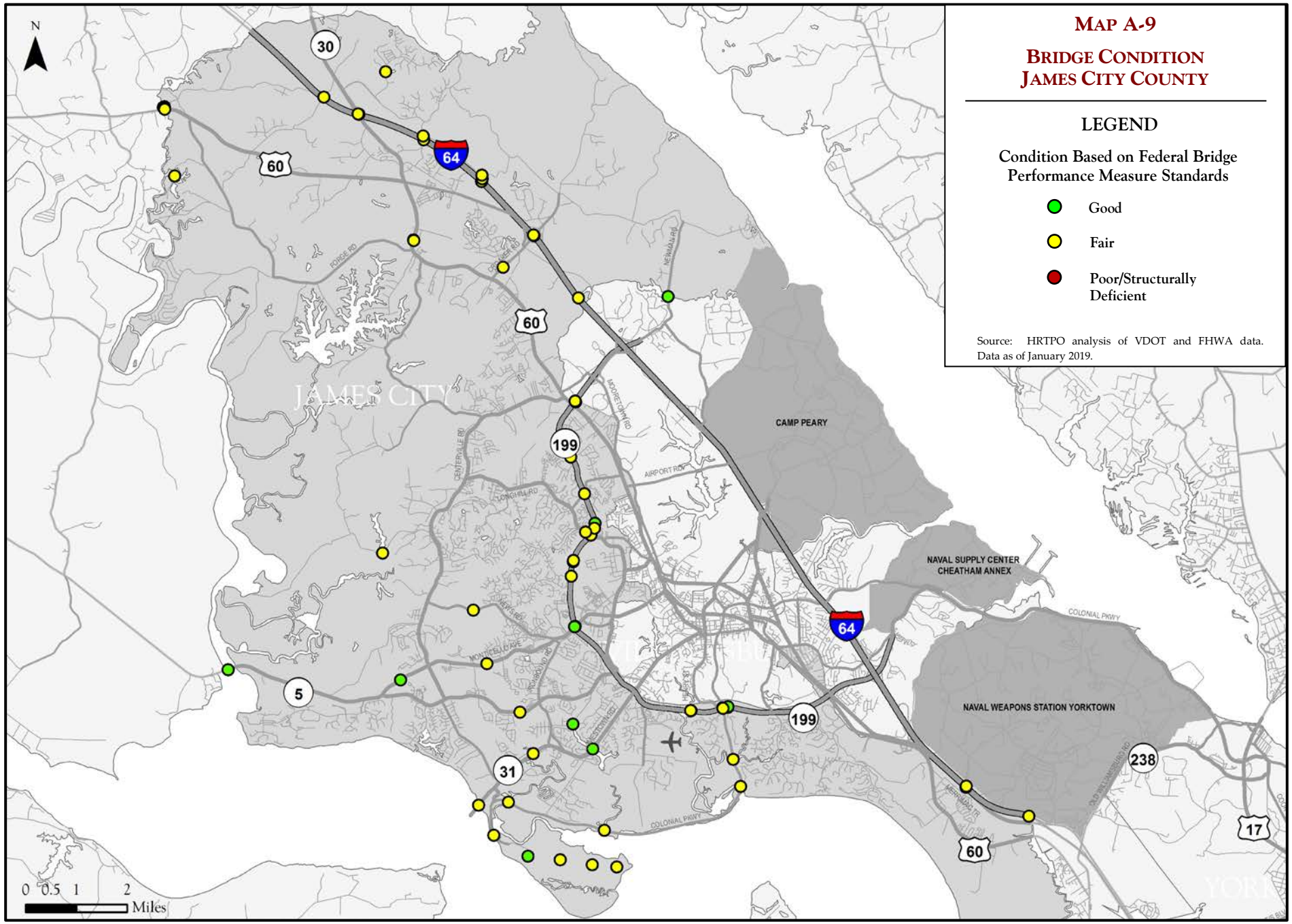
MAP A-7
EXISTING BIKEWAY FACILITIES
JAMES CITY COUNTY

LEGEND

- Bike lanes
- Paved multi-use paths
- Unpaved multi-use paths

Prepared by HRTPO Staff. Data Source: HRTPO.


MAP A-8
BRIDGE CLASSIFICATION
JAMES CITY COUNTY
LEGEND
Structurally Deficient Bridges
Functionally Obsolete Bridges
Non-Deficient Bridges
Bridges with a Posted Weight Limit
Source: HRTPO analysis of VDOT and FHWA data. Data as of January 2019.
N
JAMES CITY
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
30
60
64
199
5
31
238
17
0 0.5 1 2
Miles



MAP A-9

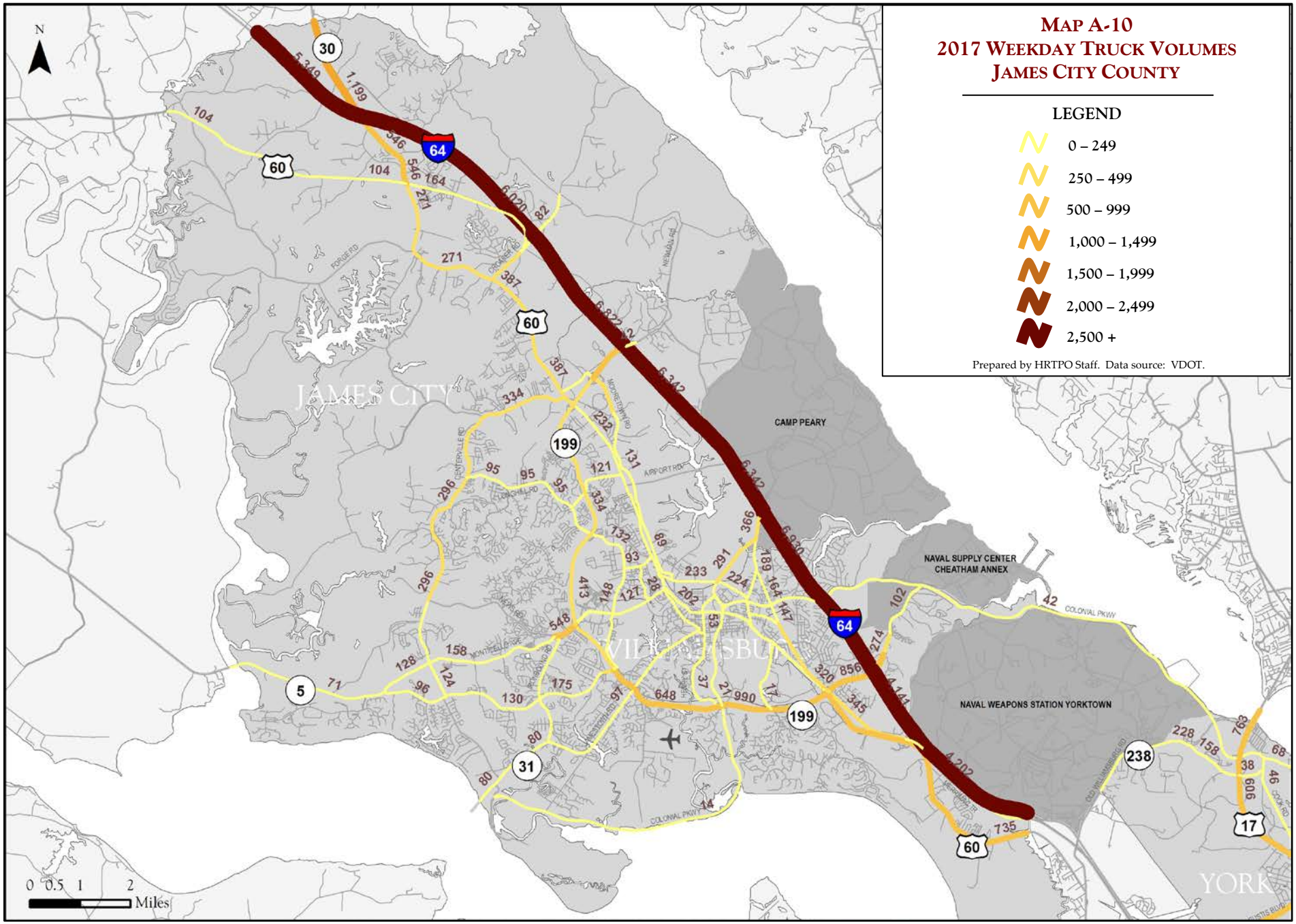
BRIDGE CONDITION
JAMES CITY COUNTY

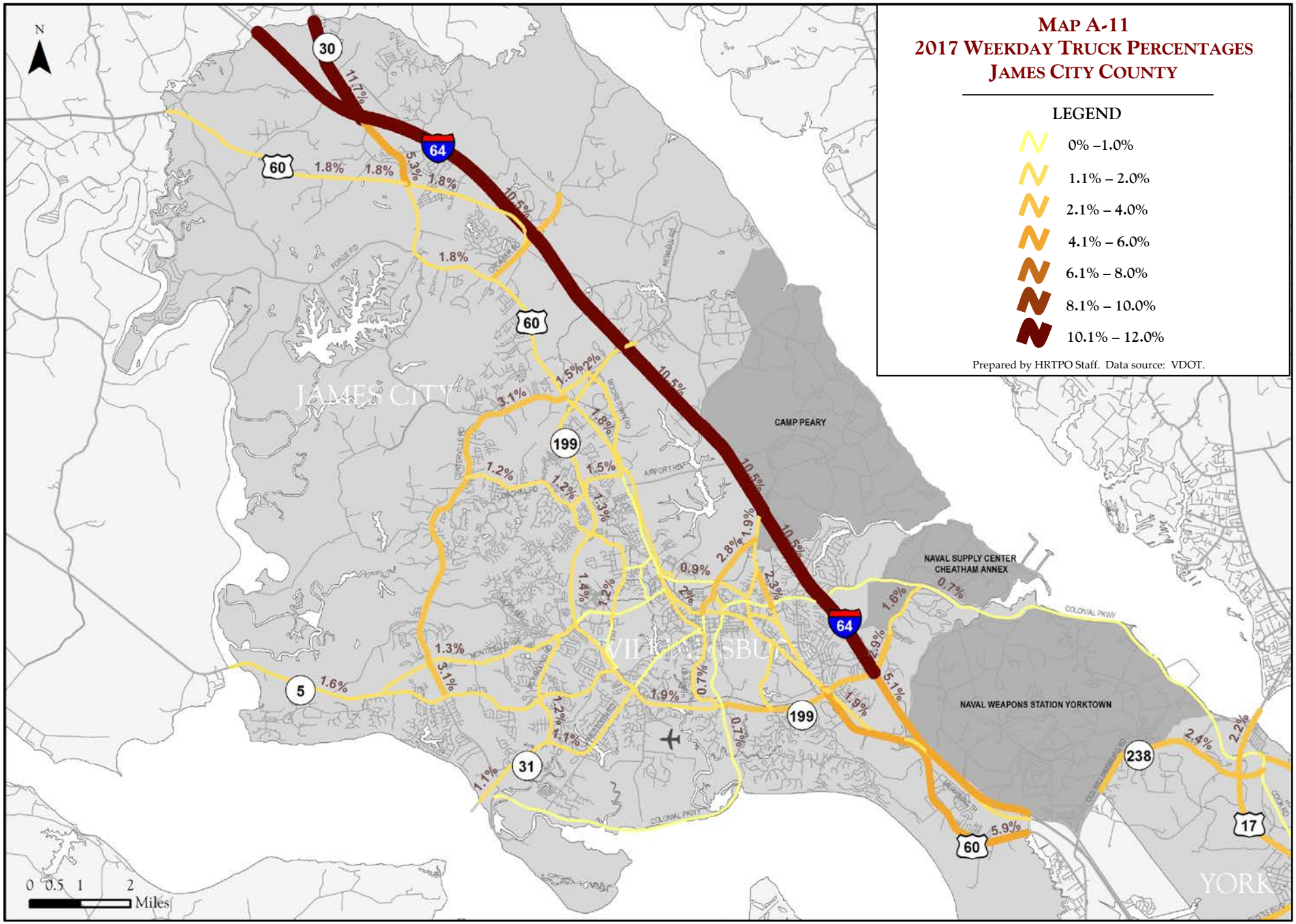
LEGEND

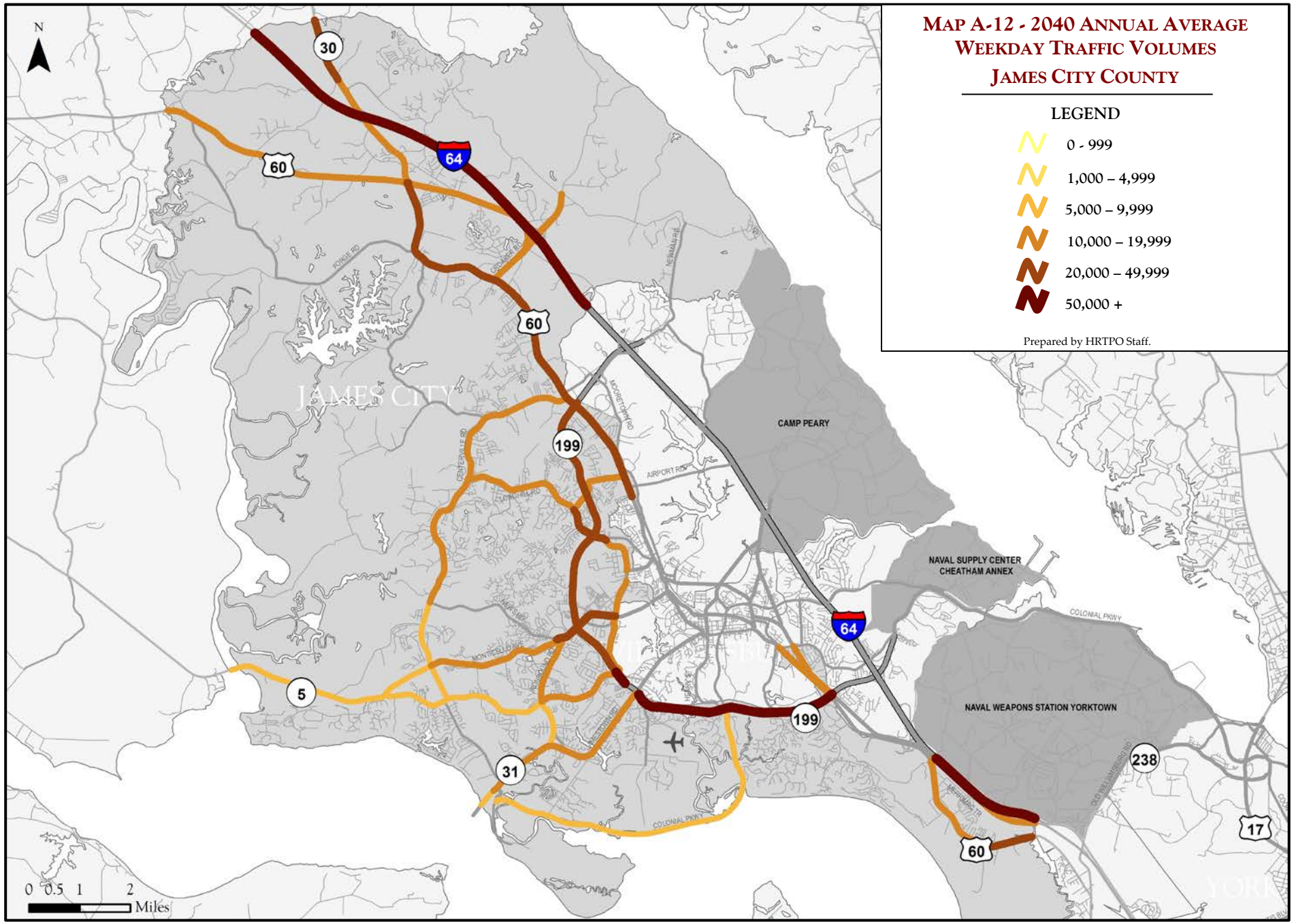
Condition Based on Federal Bridge Performance Measure Standards

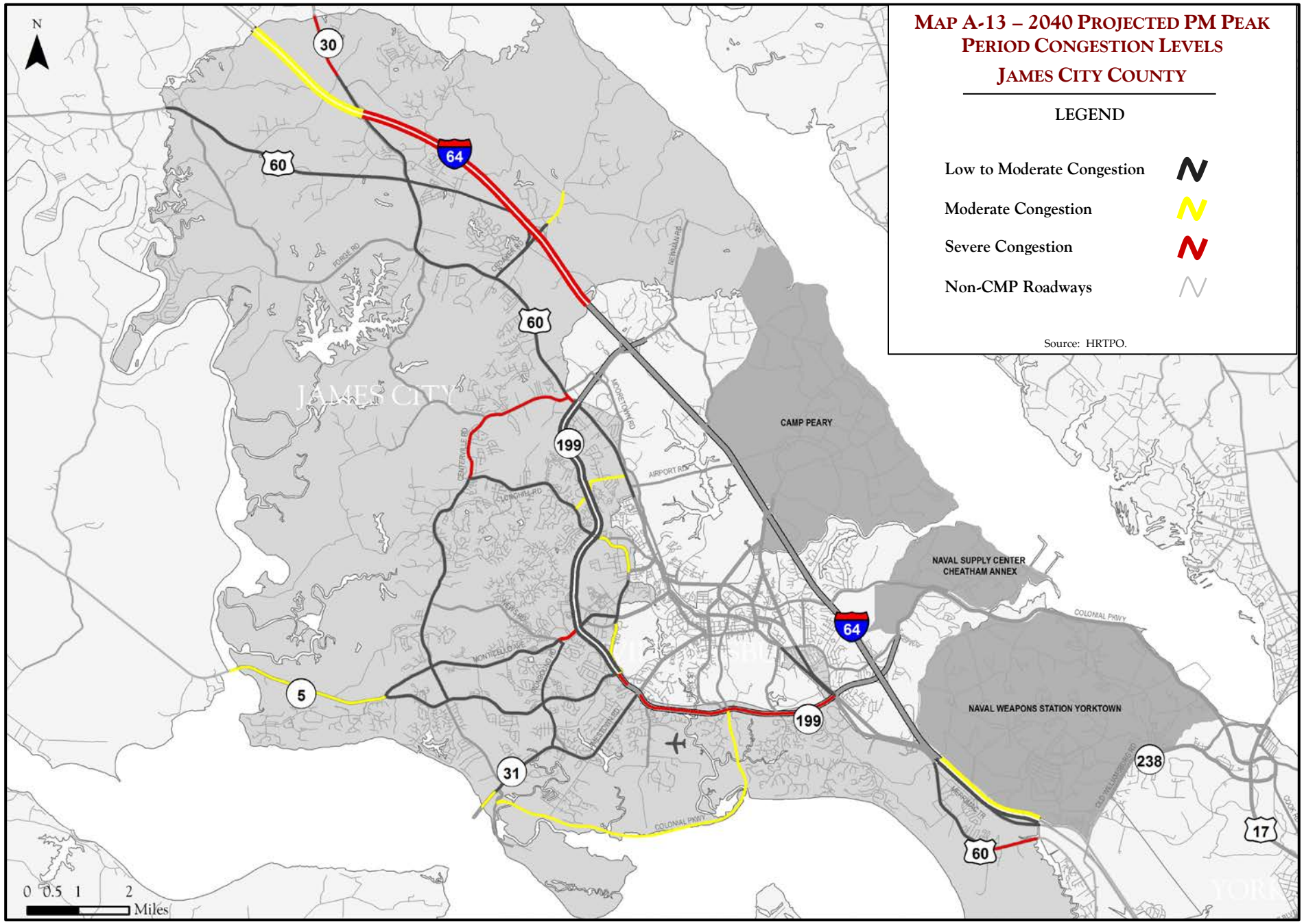
- Good
- Fair
- Poor/Structurally Deficient

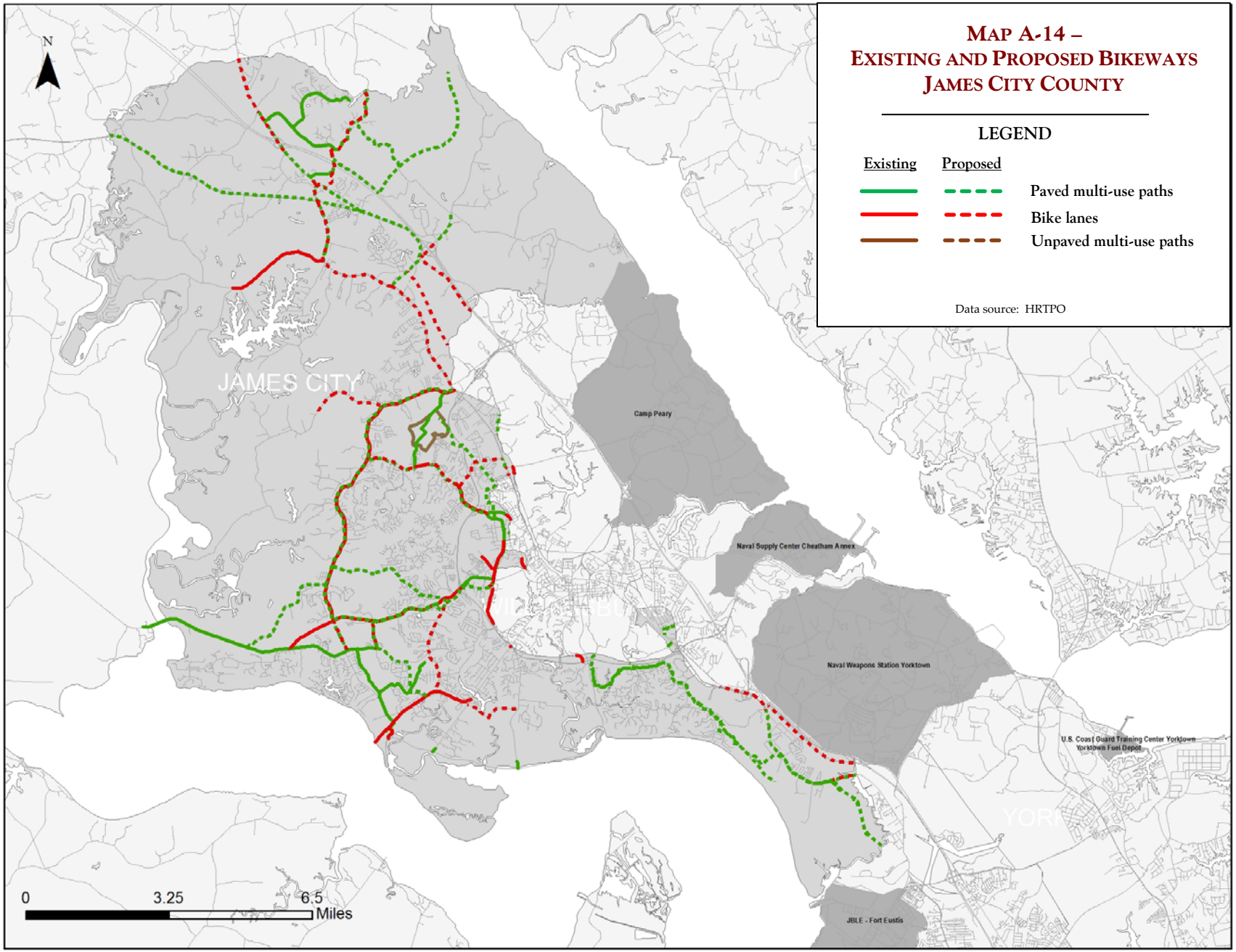
Source: HRTPO analysis of VDOT and FHWA data. Data as of January 2019.


MAP A-10
2017 WEEKDAY TRUCK VOLUMES
JAMES CITY COUNTY
LEGEND
0 – 249
250 – 499
500 – 999
1,000 – 1,499
1,500 – 1,999
2,000 – 2,499
2,500 +
Prepared by HRTPO Staff. Data source: VDOT.
N
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JAMES CITY
YORK
0 0.5 1 2
Miles


MAP A-11
2017 WEEKDAY TRUCK PERCENTAGES
JAMES CITY COUNTY
LEGEND
0% –1.0%
1.1% – 2.0%
2.1% – 4.0%
4.1% – 6.0%
6.1% – 8.0%
8.1% – 10.0%
10.1% – 12.0%
Prepared by HRTPO Staff. Data source: VDOT.
N
JAMES CITY
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
YORK
COLONIAL PKWY
0 0.5 1 2
Miles


MAP A-12 - 2040 ANNUAL AVERAGE WEEKDAY TRAFFIC VOLUMES
JAMES CITY COUNTY
LEGEND
0 - 999
1,000 – 4,999
5,000 – 9,999
10,000 – 19,999
20,000 – 49,999
50,000 +
Prepared by HRTPO Staff.
N
JAMES CITY
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
30
60
64
199
5
31
238
17
0 0.5 1 2
Miles


MAP A-13 – 2040 PROJECTED PM PEAK PERIOD CONGESTION LEVELS
JAMES CITY COUNTY
LEGEND
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
N
30
60
64
60
199
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
64
NAVAL WEAPONS STATION YORKTOWN
5
199
31
238
17
60
0 0.5 1 2
Miles

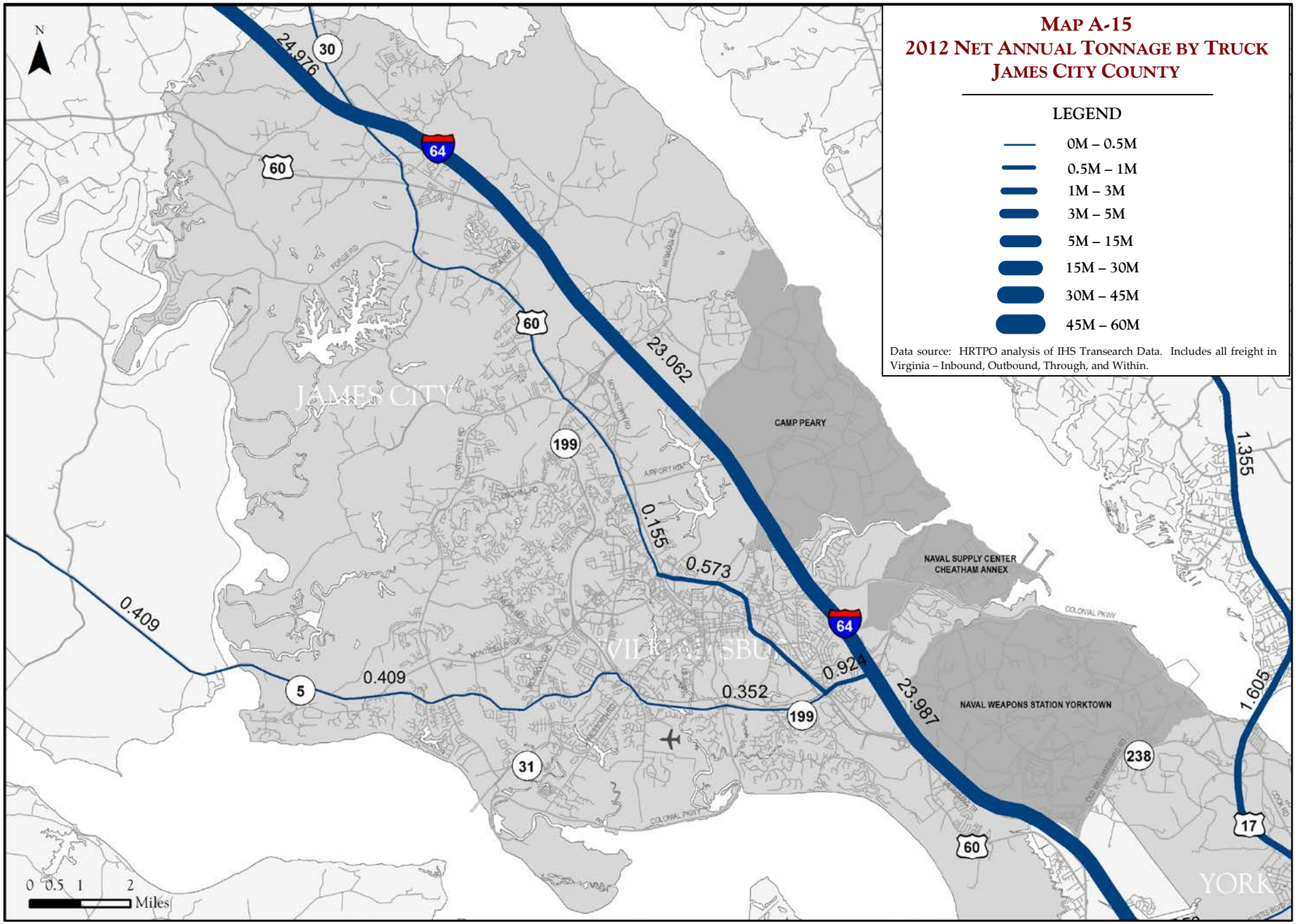


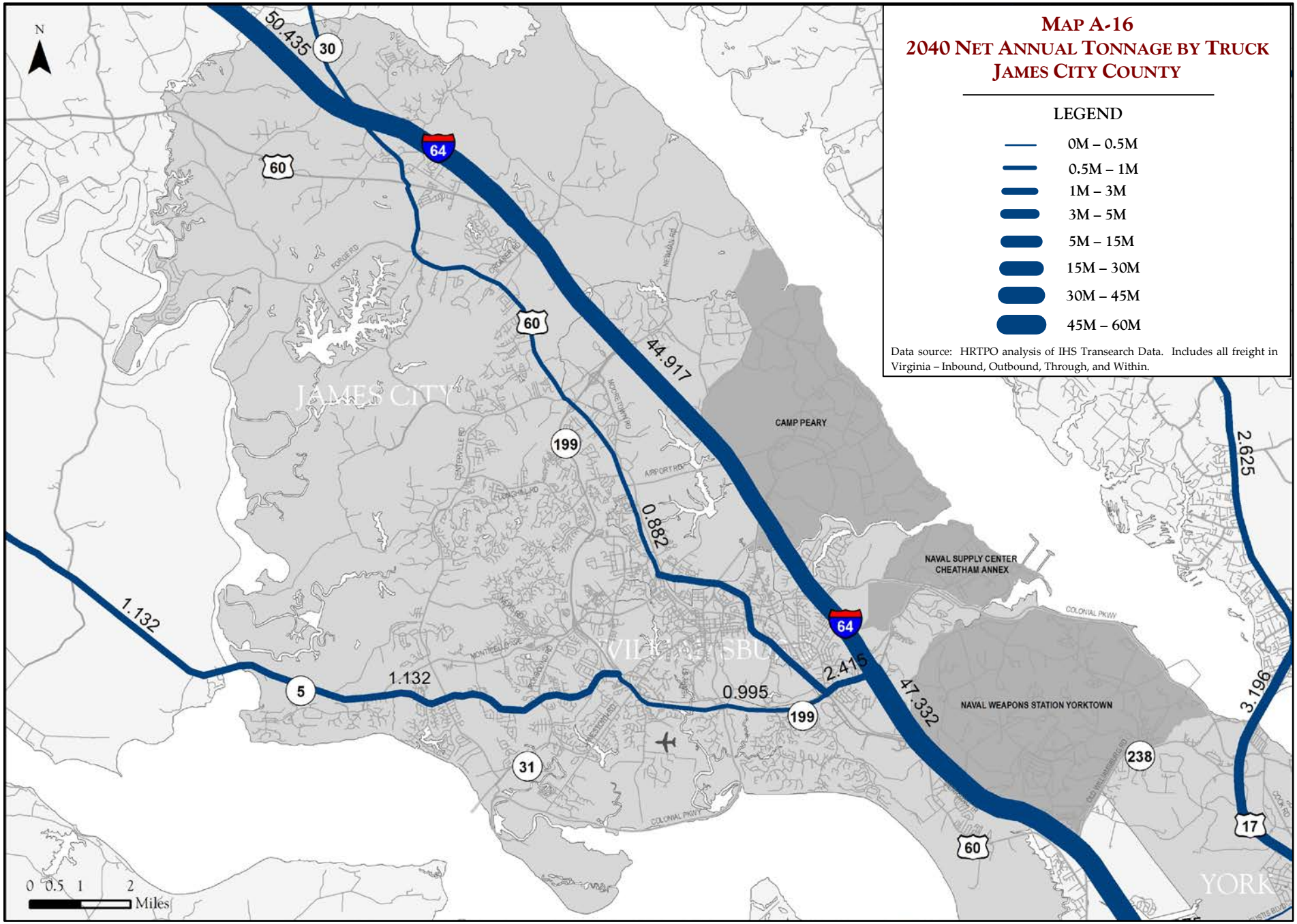
MAP A-14 – EXISTING AND PROPOSED BIKEWAYS JAMES CITY COUNTY

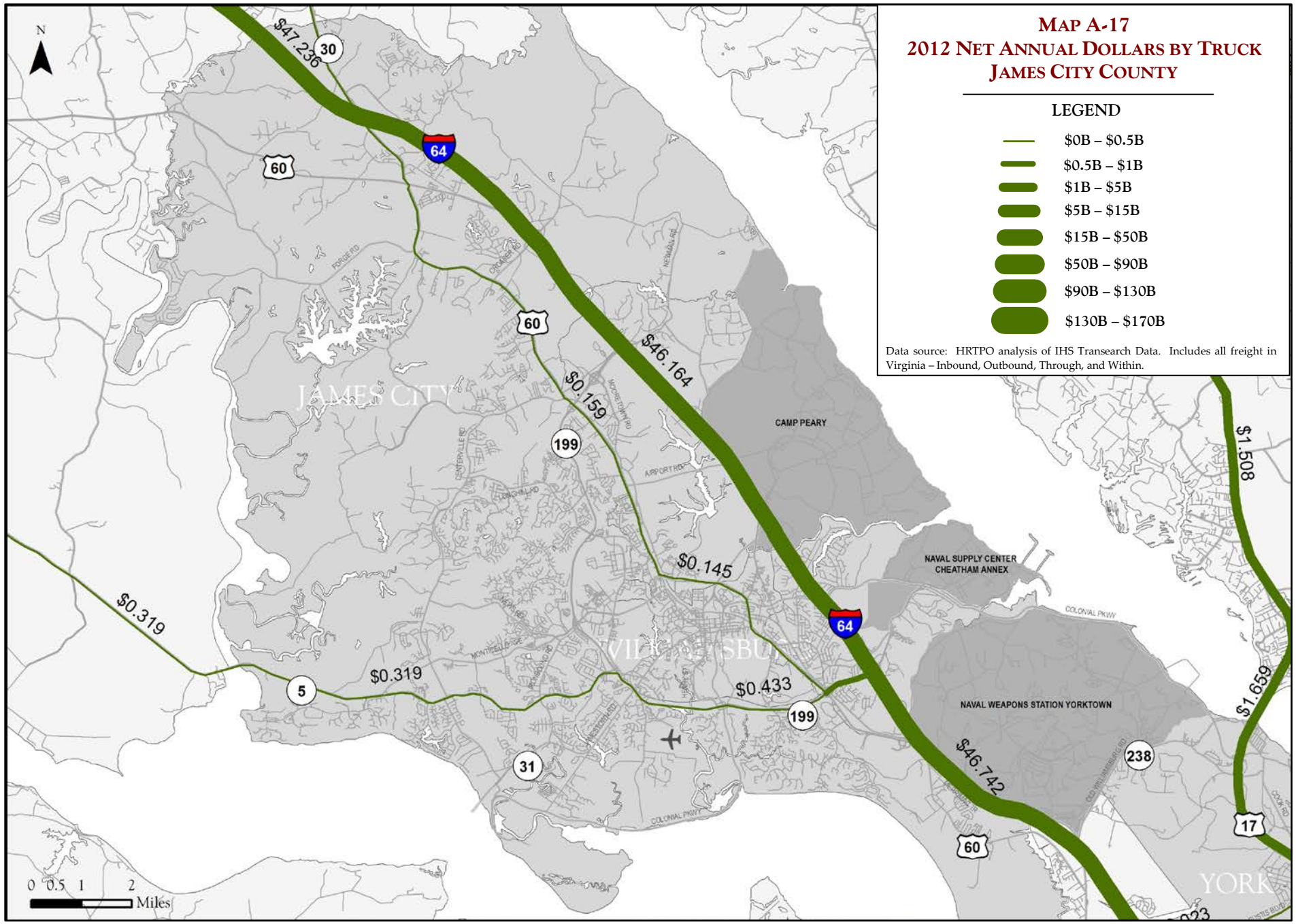
LEGEND

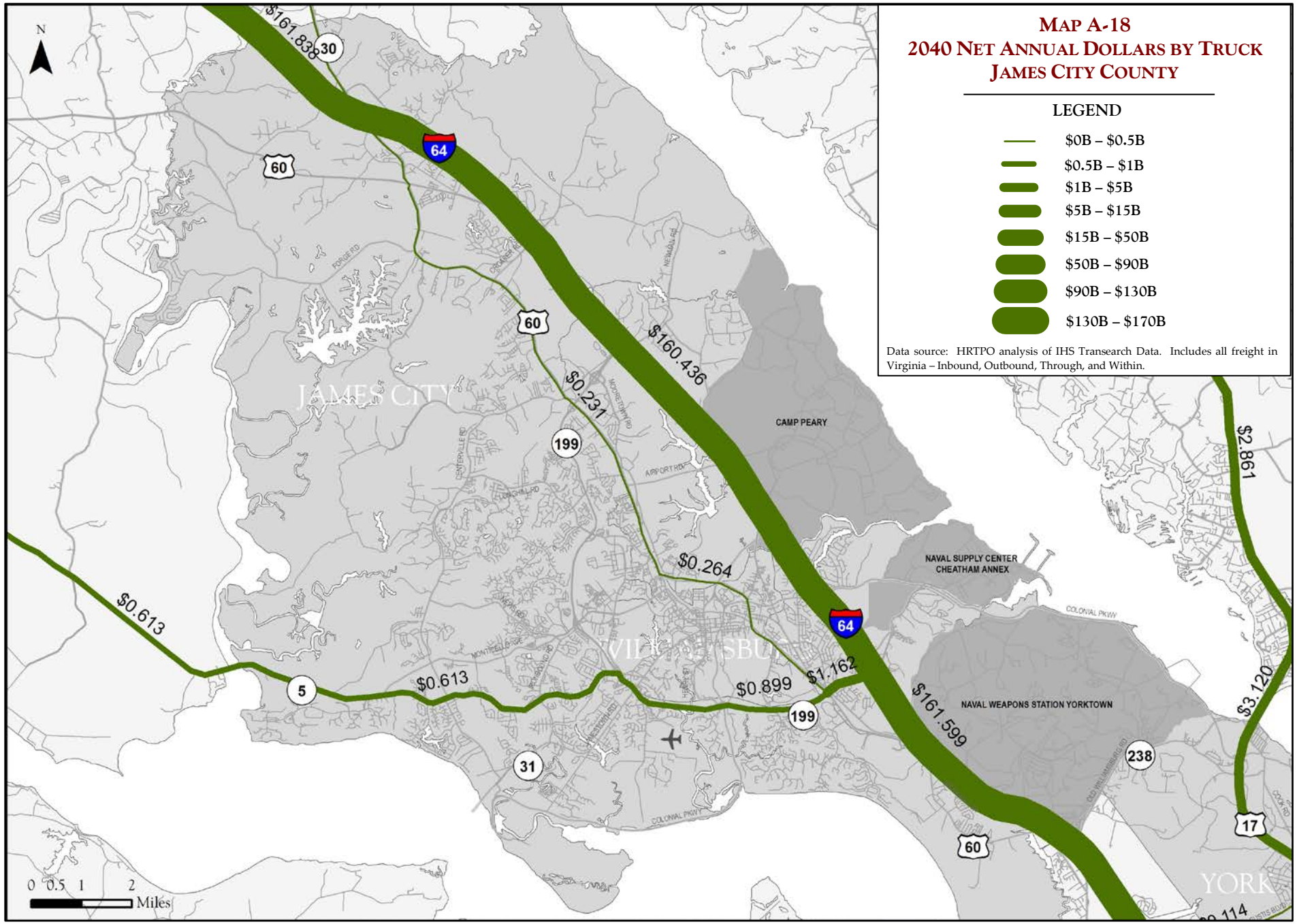
Existing	Proposed	
———	- - - -	Paved multi-use paths
———	- - - -	Bike lanes
———	- - - -	Unpaved multi-use paths

Data source: HRTPO

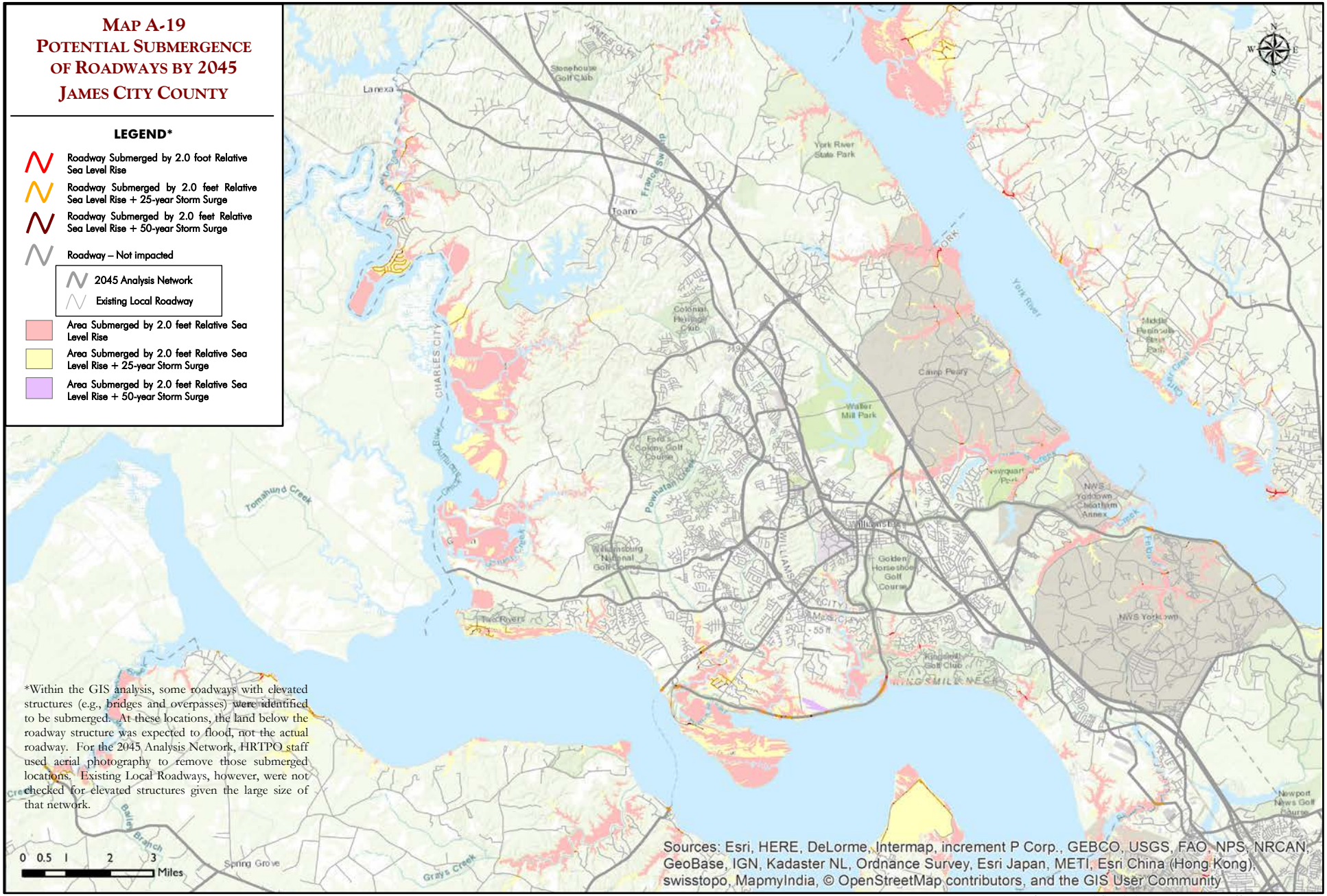

MAP A-15
2012 NET ANNUAL TONNAGE BY TRUCK
JAMES CITY COUNTY
LEGEND
0M – 0.5M
0.5M – 1M
1M – 3M
3M – 5M
5M – 15M
15M – 30M
30M – 45M
45M – 60M
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
N
24.976
23.062
0.155
0.573
0.409
0.409
0.352
0.924
23.987
1.355
1.605
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JAMES CITY
YORK
COLONIAL PKWY
0 0.5 1 2
Miles


MAP A-16
2040 NET ANNUAL TONNAGE BY TRUCK
JAMES CITY COUNTY
LEGEND
0M – 0.5M
0.5M – 1M
1M – 3M
3M – 5M
5M – 15M
15M – 30M
30M – 45M
45M – 60M
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
N
50.435
44.917
0.882
1.132
1.132
0.995
2.415
47.332
2.625
3.196
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JAMES CITY
YORK
COLONIAL PKWY
64
60
199
30
5
31
238
17
0 0.5 1 2
Miles


MAP A-17
2012 NET ANNUAL DOLLARS BY TRUCK
JAMES CITY COUNTY
LEGEND
$0B – $0.5B
$0.5B – $1B
$1B – $5B
$5B – $15B
$15B – $50B
$50B – $90B
$90B – $130B
$130B – $170B
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
N
$47.236
$46.164
$0.159
$0.145
$0.319
$0.319
$0.433
$46.742
$1.508
$1.659
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JAMES CITY
YORK
30
60
64
60
199
5
31
64
199
238
60
17
0 0.5 1 2
Miles


MAP A-18
2040 NET ANNUAL DOLLARS BY TRUCK
JAMES CITY COUNTY
LEGEND
$0B – $0.5B
$0.5B – $1B
$1B – $5B
$5B – $15B
$15B – $50B
$50B – $90B
$90B – $130B
$130B – $170B
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
$161.838
$160.436
$0.231
$0.264
$0.613
$0.613
$0.899
$1.162
$161.599
$2.861
$3.120
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JAMES CITY
YORK
64
60
199
5
31
238
17
30
COLONIAL PKWY
0 0.5 1 2
Miles

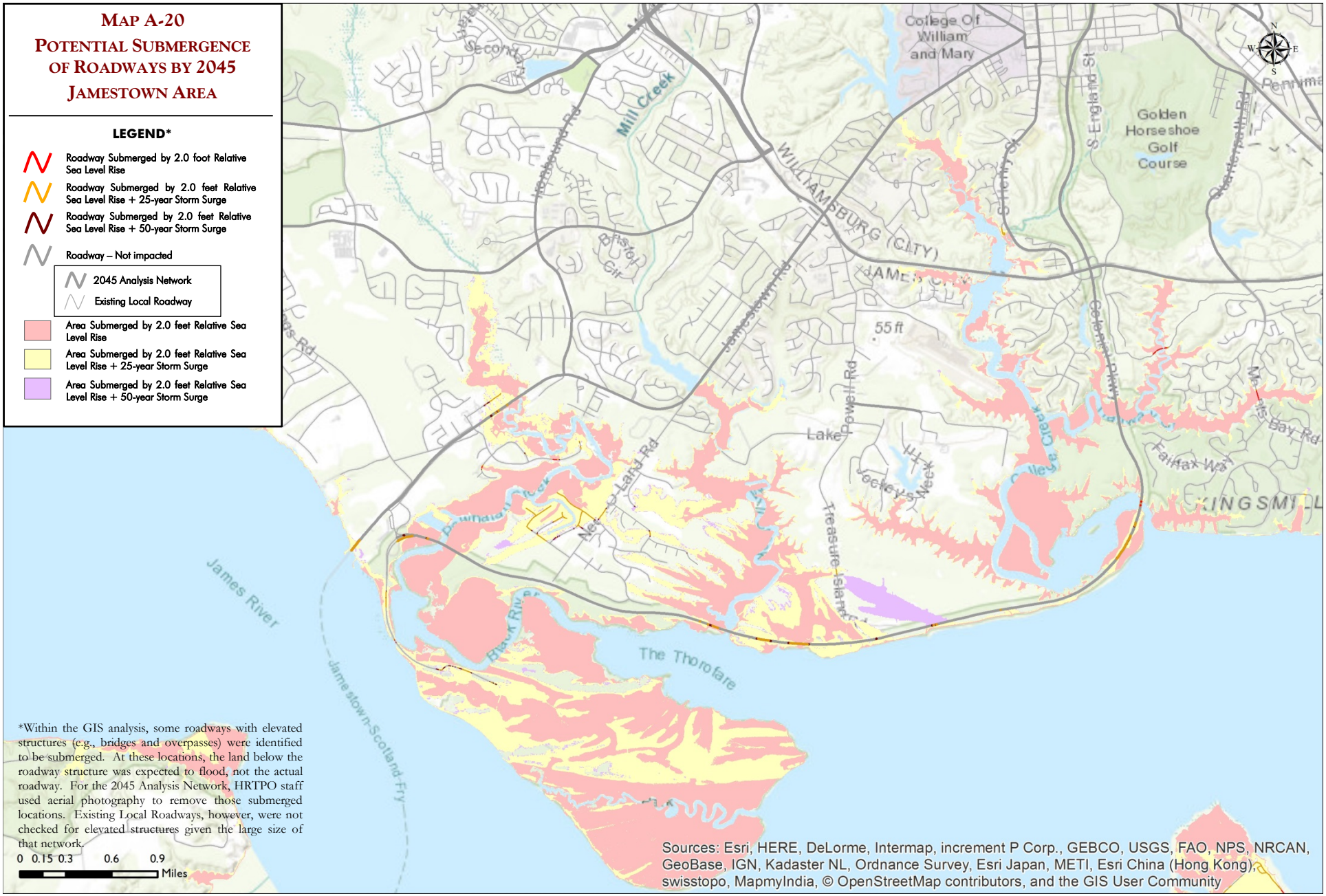
Map A-19
Potential Submergence of Roadways by 2045
James City County



Prepared by: HRTPO Staff, October 2015

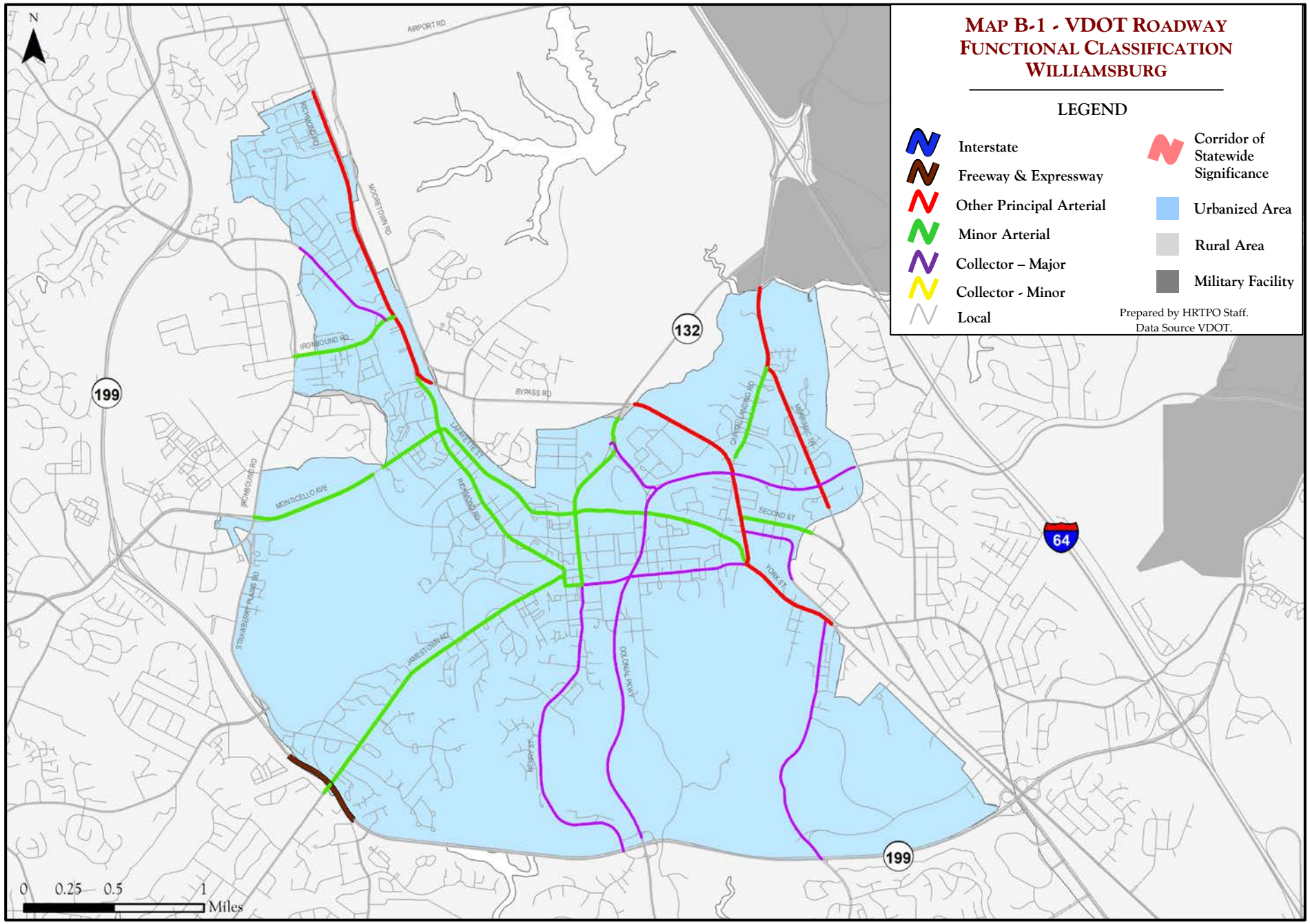
Data source for projected flooded areas: HRPDC Staff, October 2015

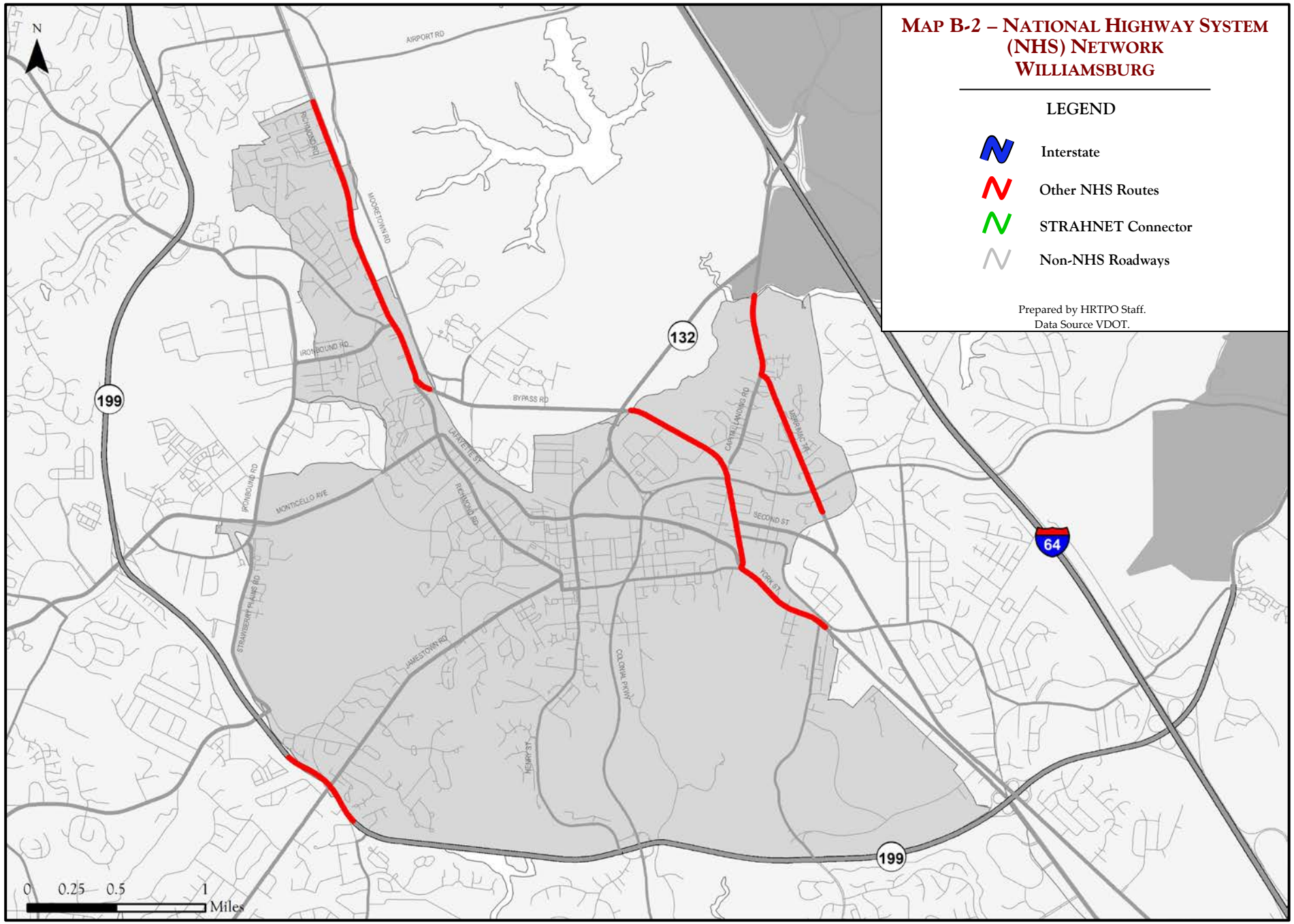
MAP A-20
POTENTIAL SUBMERGENCE OF ROADWAYS BY 2045
JAMESTOWN AREA



*Within the GIS analysis, some roadways with elevated structures (e.g., bridges and overpasses) were identified to be submerged. At these locations, the land below the roadway structure was expected to flood, not the actual roadway. For the 2045 Analysis Network, HRTPO staff used aerial photography to remove those submerged locations. Existing Local Roadways, however, were not checked for elevated structures given the large size of that network.

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


MAP B-1 - VDOT ROADWAY FUNCTIONAL CLASSIFICATION WILLIAMSBURG
LEGEND
Interstate
Freeway & Expressway
Other Principal Arterial
Minor Arterial
Collector – Major
Collector - Minor
Local
Corridor of Statewide Significance
Urbanized Area
Rural Area
Military Facility
Prepared by HRTPO Staff.
Data Source VDOT.
N
AIRPORT RD
MOORETOWN RD
IRONBOUND RD
BYPASS RD
LAFAYETTE ST
RICHMOND RD
MONTICELLO AVE
STRAWBERRY PLAINS RD
JAMESTOWN RD
CAPITOL LANDING RD
MERRIMAC TR
SECOND ST
YORK ST
COLONIAL PKWY
HENRY ST
132
199
64
0 0.25 0.5 1 Miles

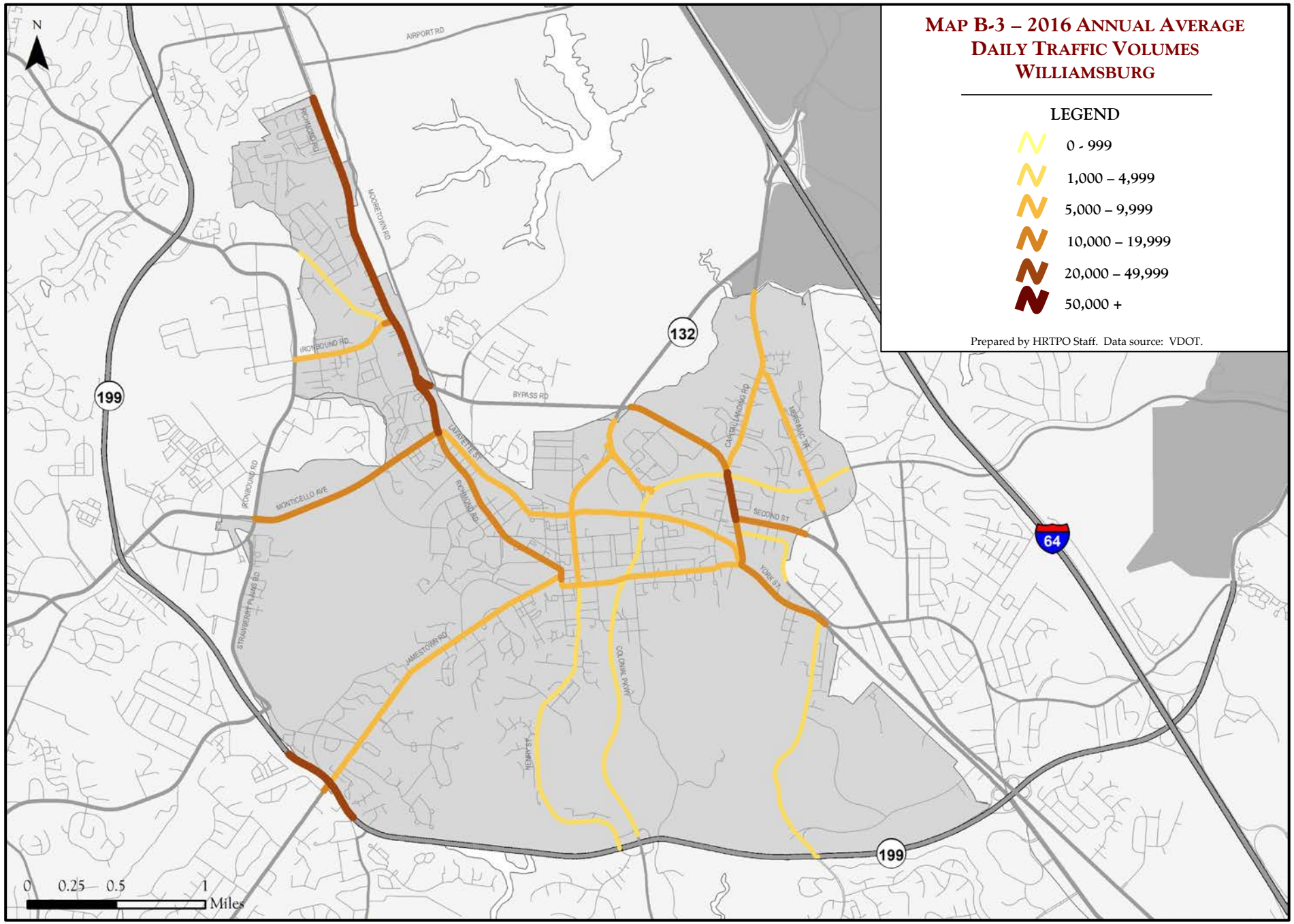


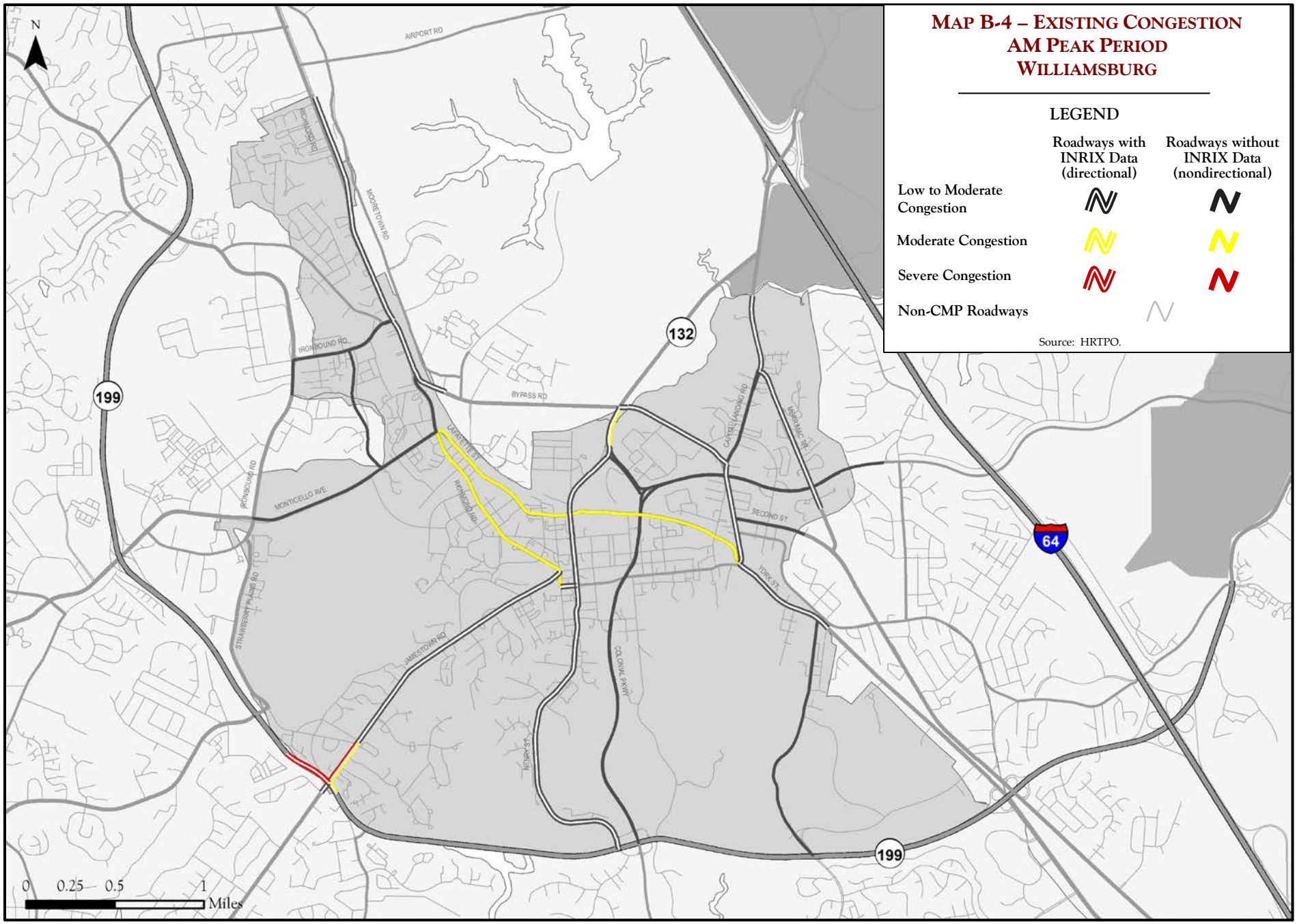
MAP B-2 – NATIONAL HIGHWAY SYSTEM (NHS) NETWORK WILLIAMSBURG

LEGEND

- Interstate
- Other NHS Routes
- STRAHNET Connector
- Non-NHS Roadways

Prepared by HRTPO Staff.
Data Source VDOT.


N
AIRPORT RD
RICHMOND RD
MOORETOWN RD
IRONBOUND RD
BYPASS RD
LAFAYETTE ST
MONTICELLO AVE
RICHMOND RD
STRAWBERRY PLAINS RD
JAMESTOWN RD
HENRY ST
COLONIAL PKWY
CAPITOL LANDING RD
MERRIMAC TRL
SECOND ST
YORK ST
199
132
64
199
0 0.25 0.5 1 Miles
MAP B-3 – 2016 ANNUAL AVERAGE DAILY TRAFFIC VOLUMES WILLIAMSBURG
LEGEND
0 - 999
1,000 – 4,999
5,000 – 9,999
10,000 – 19,999
20,000 – 49,999
50,000 +
Prepared by HRTPO Staff. Data source: VDOT.

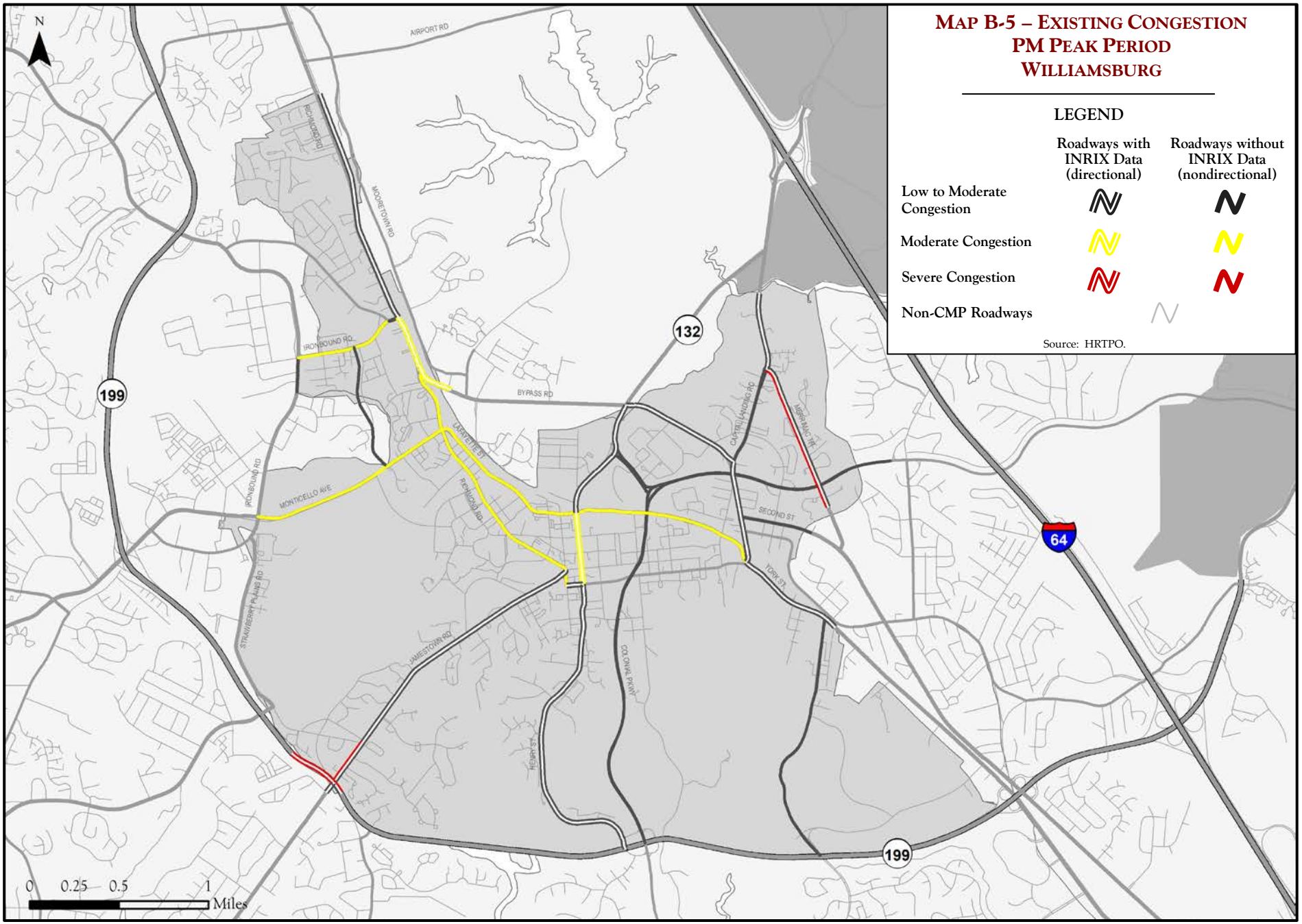


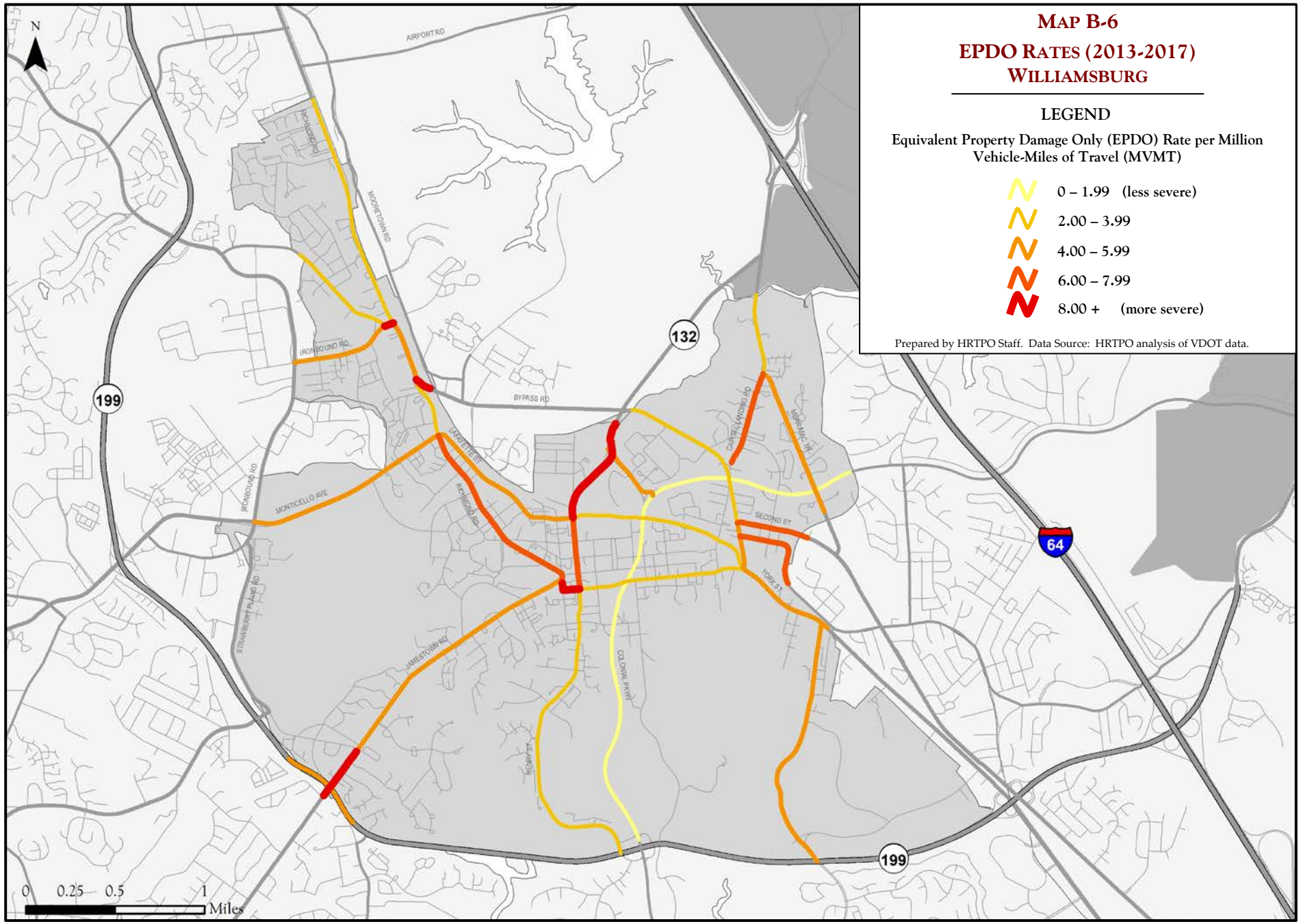
MAP B-4 – EXISTING CONGESTION AM PEAK PERIOD WILLIAMSBURG

LEGEND

	Roadways with INRIX Data (directional)	Roadways without INRIX Data (nondirectional)
Low to Moderate Congestion		
Moderate Congestion		
Severe Congestion		
Non-CMP Roadways		

Source: HRTPO.


N
AIRPORT RD
RICHMOND RD
MOORETOWN RD
IRONBOUND RD
BYPASS RD
LAFAYETTE ST
MONTICELLO AVE
RICHMOND RD
IRONBOUND RD
STRAWBERRY PLAINS RD
JAMESTOWN RD
COLONIAL PKWY
HENRY ST
CAPITOL LANDING RD
MERRIMAC TR
SECOND ST
YORK ST
132
199
64
199
0 0.25 0.5 1 Miles
MAP B-5 – EXISTING CONGESTION
PM PEAK PERIOD
WILLIAMSBURG
LEGEND
Roadways with INRIX Data (directional)
Roadways without INRIX Data (nondirectional)
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.



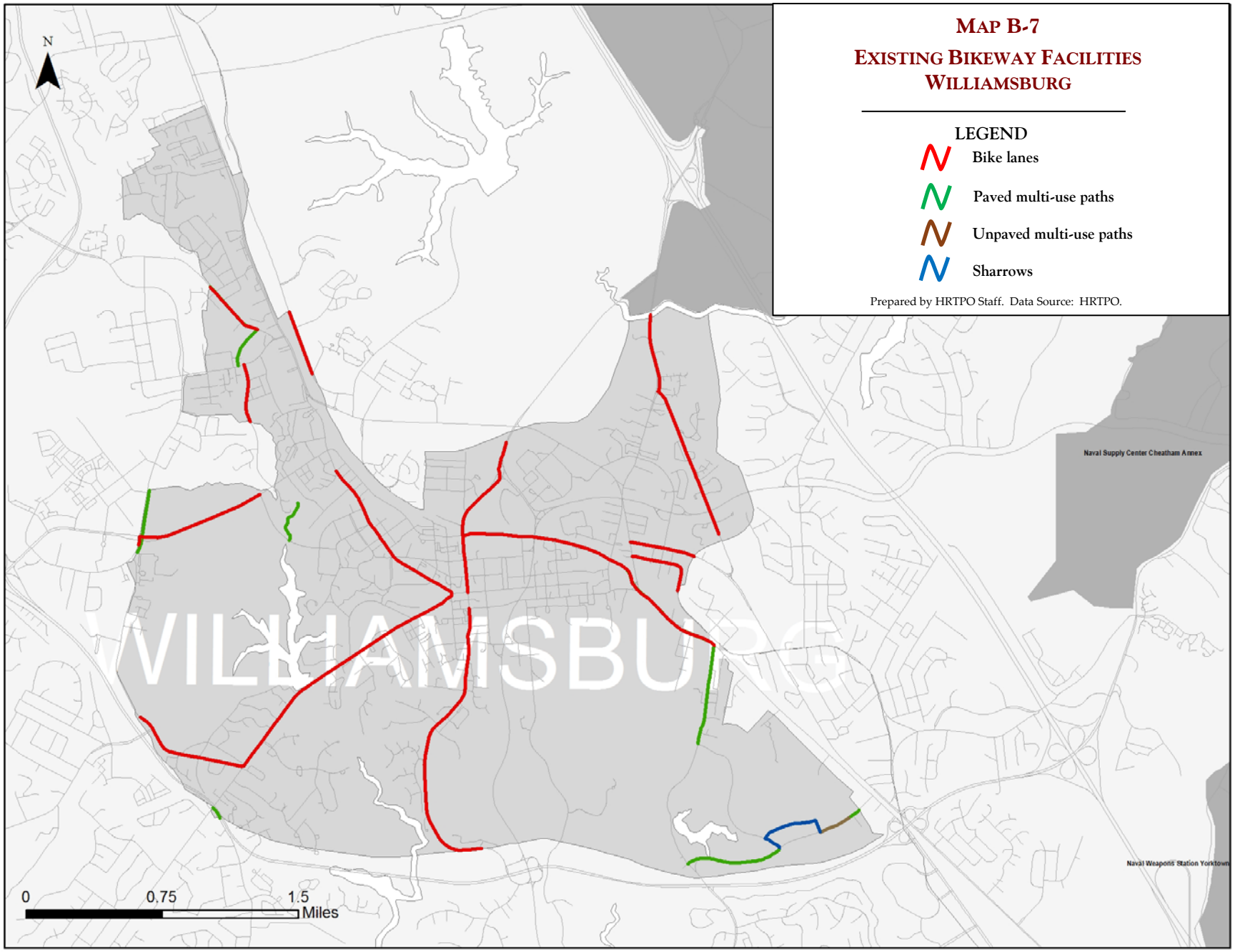
MAP B-6
EPDO RATES (2013-2017)
WILLIAMSBURG

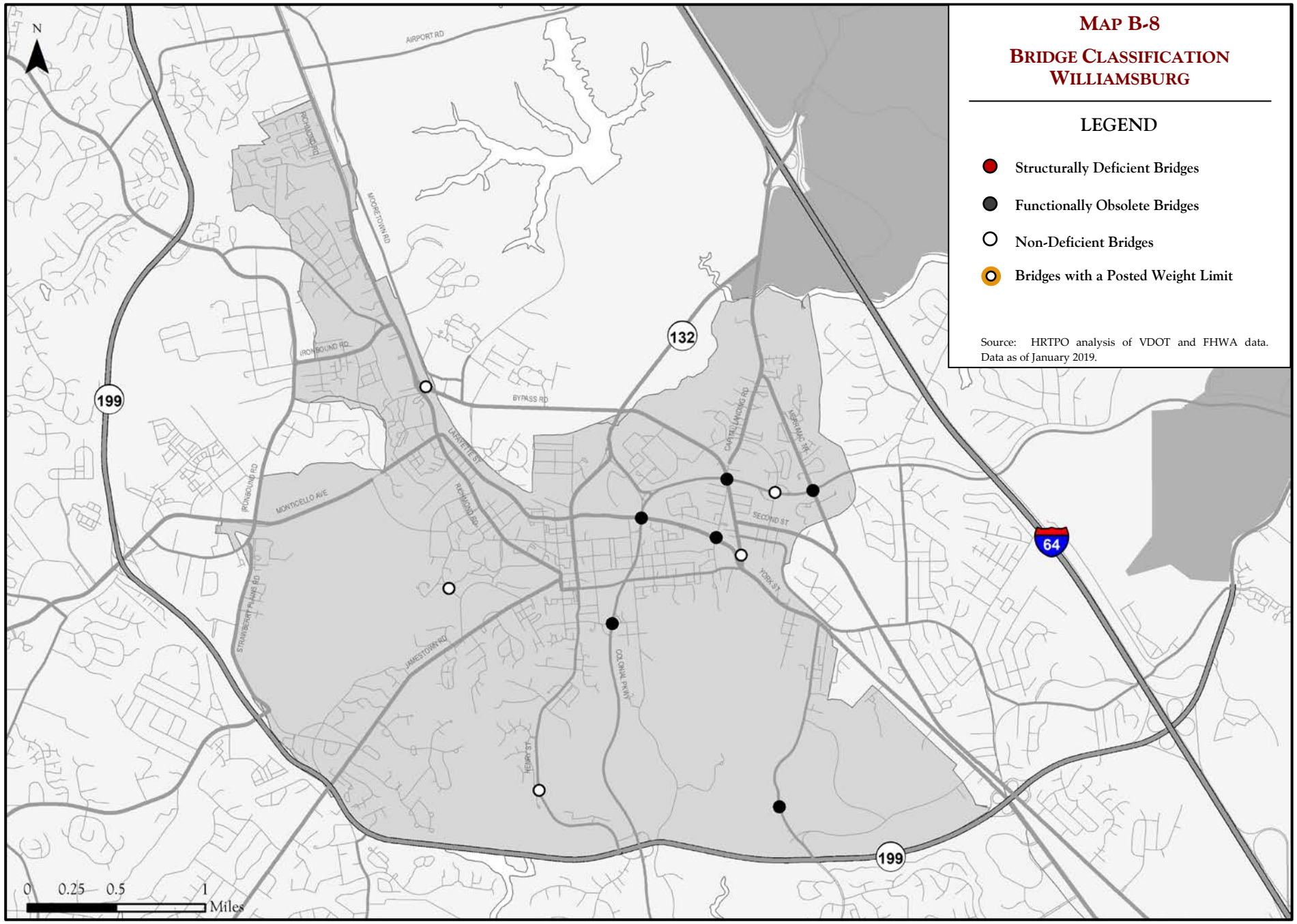
LEGEND

Equivalent Property Damage Only (EPDO) Rate per Million Vehicle-Miles of Travel (MVMT)

- 0 – 1.99 (less severe)
- 2.00 – 3.99
- 4.00 – 5.99
- 6.00 – 7.99
- 8.00 + (more severe)

Prepared by HRTPO Staff. Data Source: HRTPO analysis of VDOT data.


N
MAP B-7
EXISTING BIKEWAY FACILITIES
WILLIAMSBURG
LEGEND
Bike lanes
Paved multi-use paths
Unpaved multi-use paths
Sharrows
Prepared by HRTPO Staff. Data Source: HRTPO.
WILLIAMSBURG
Naval Supply Center Cheatham Annex
Naval Weapons Station Yorktown
0
0.75
1.5
Miles



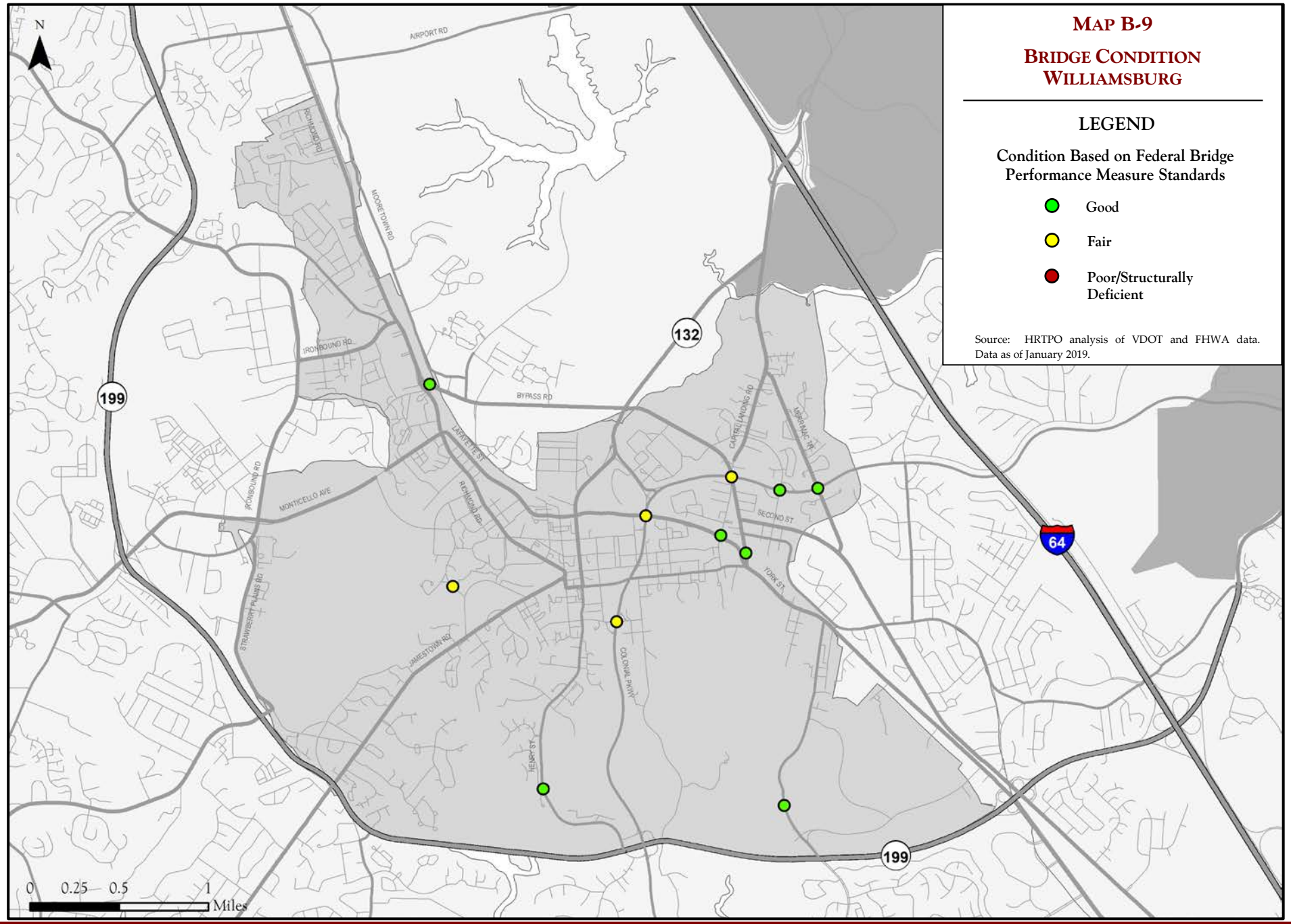
MAP B-8

BRIDGE CLASSIFICATION WILLIAMSBURG

LEGEND

- Structurally Deficient Bridges
- Functionally Obsolete Bridges
- Non-Deficient Bridges
- Bridges with a Posted Weight Limit

Source: HRTPO analysis of VDOT and FHWA data. Data as of January 2019.



MAP B-9

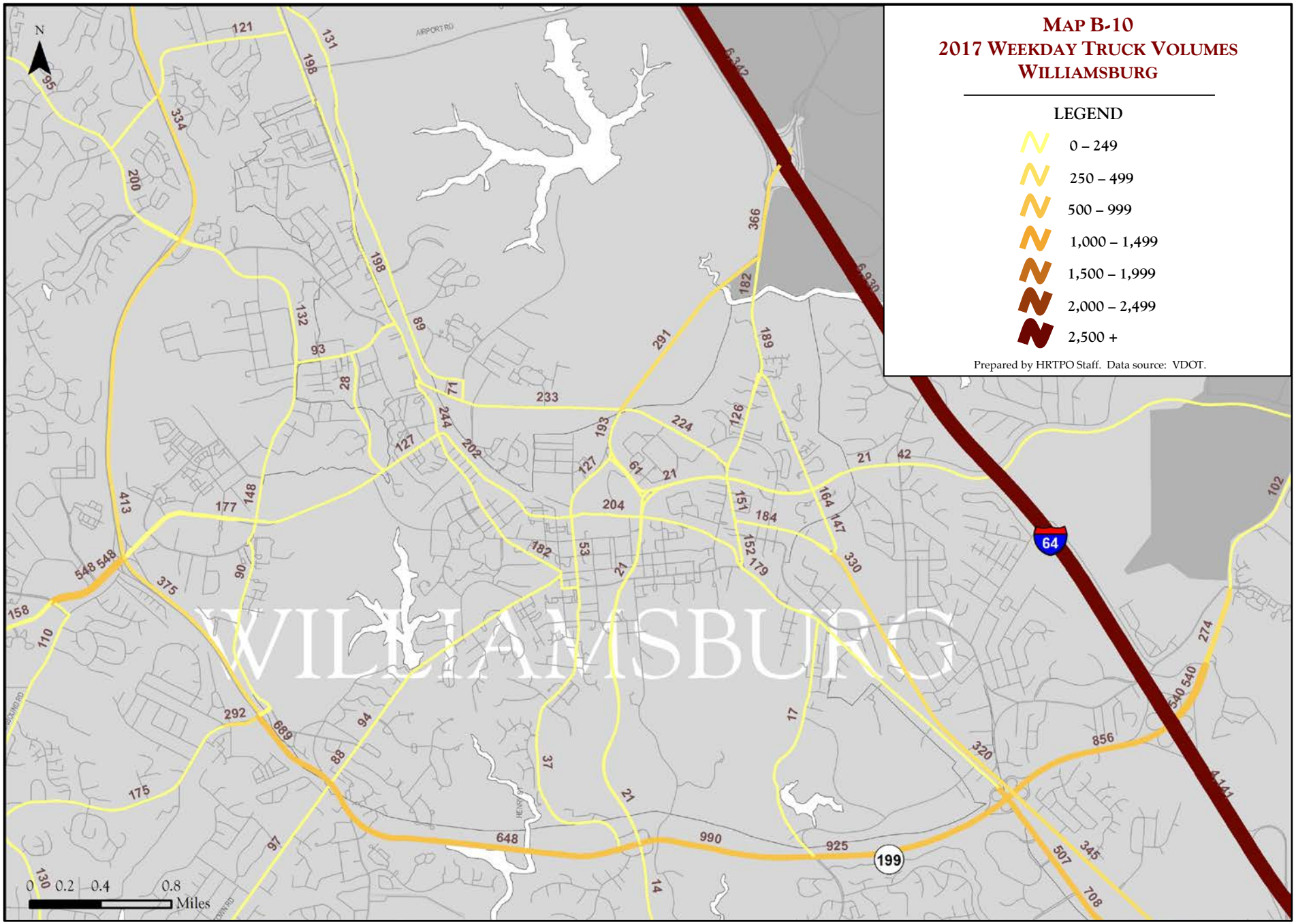
BRIDGE CONDITION WILLIAMSBURG

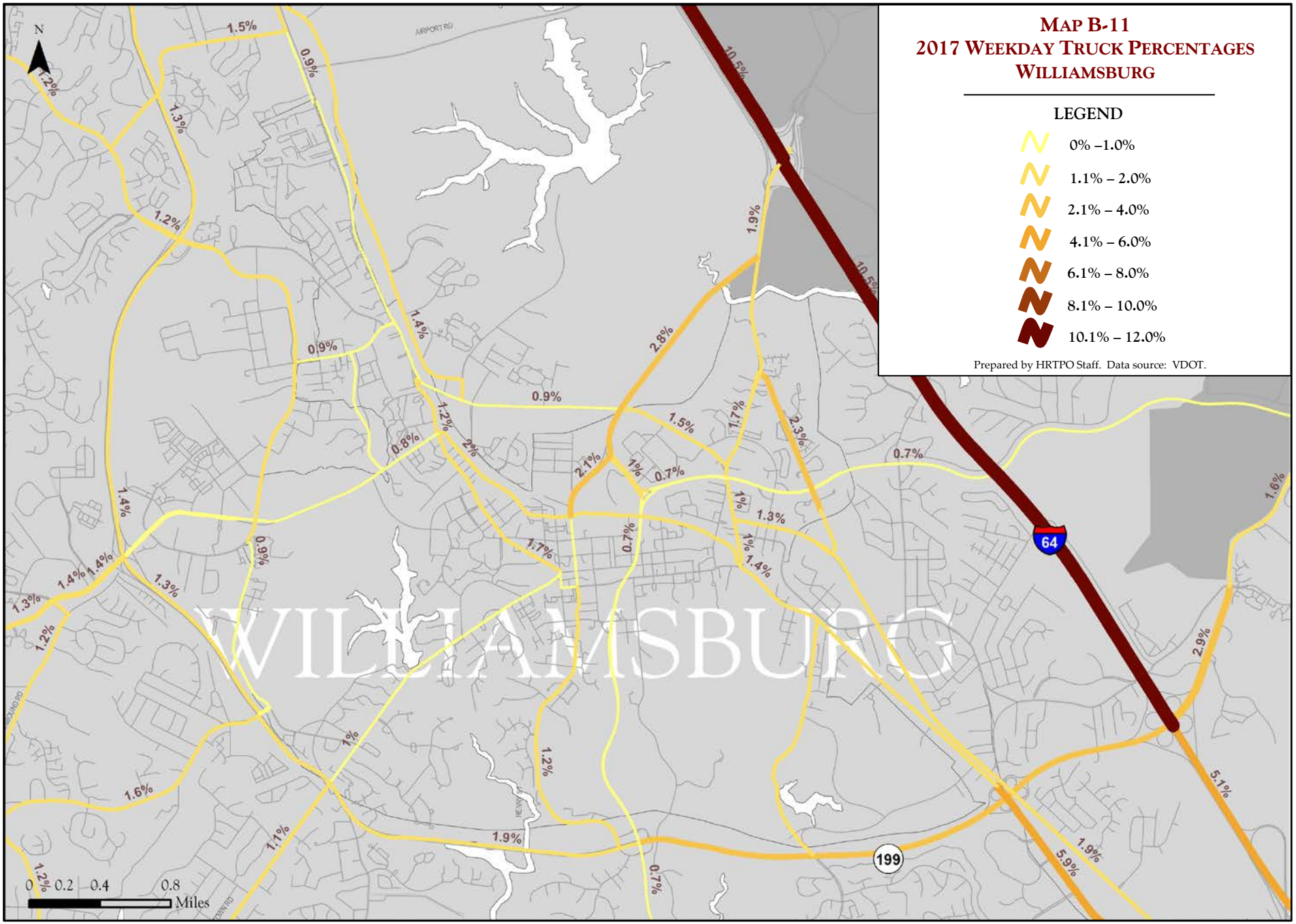
LEGEND

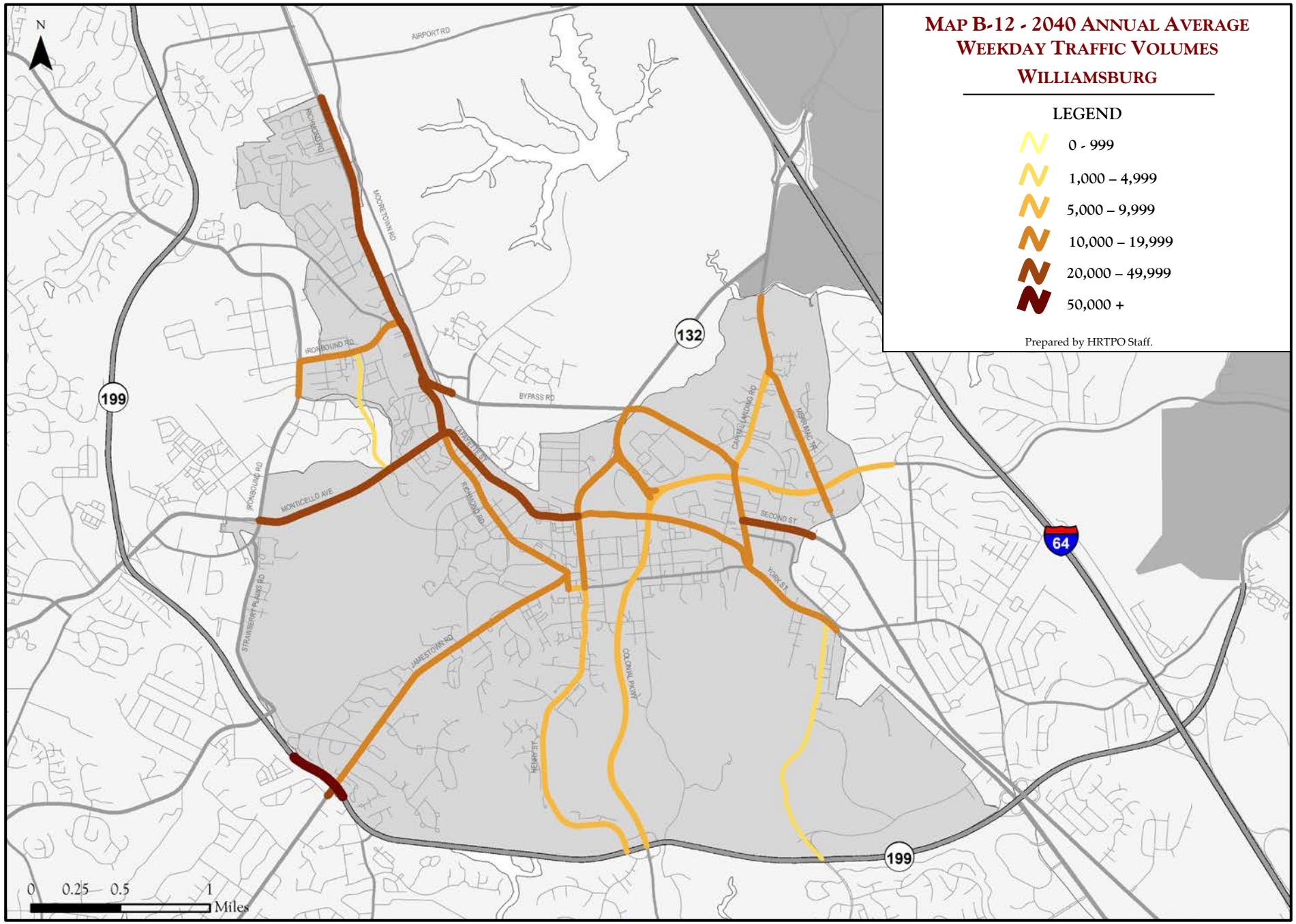
Condition Based on Federal Bridge Performance Measure Standards

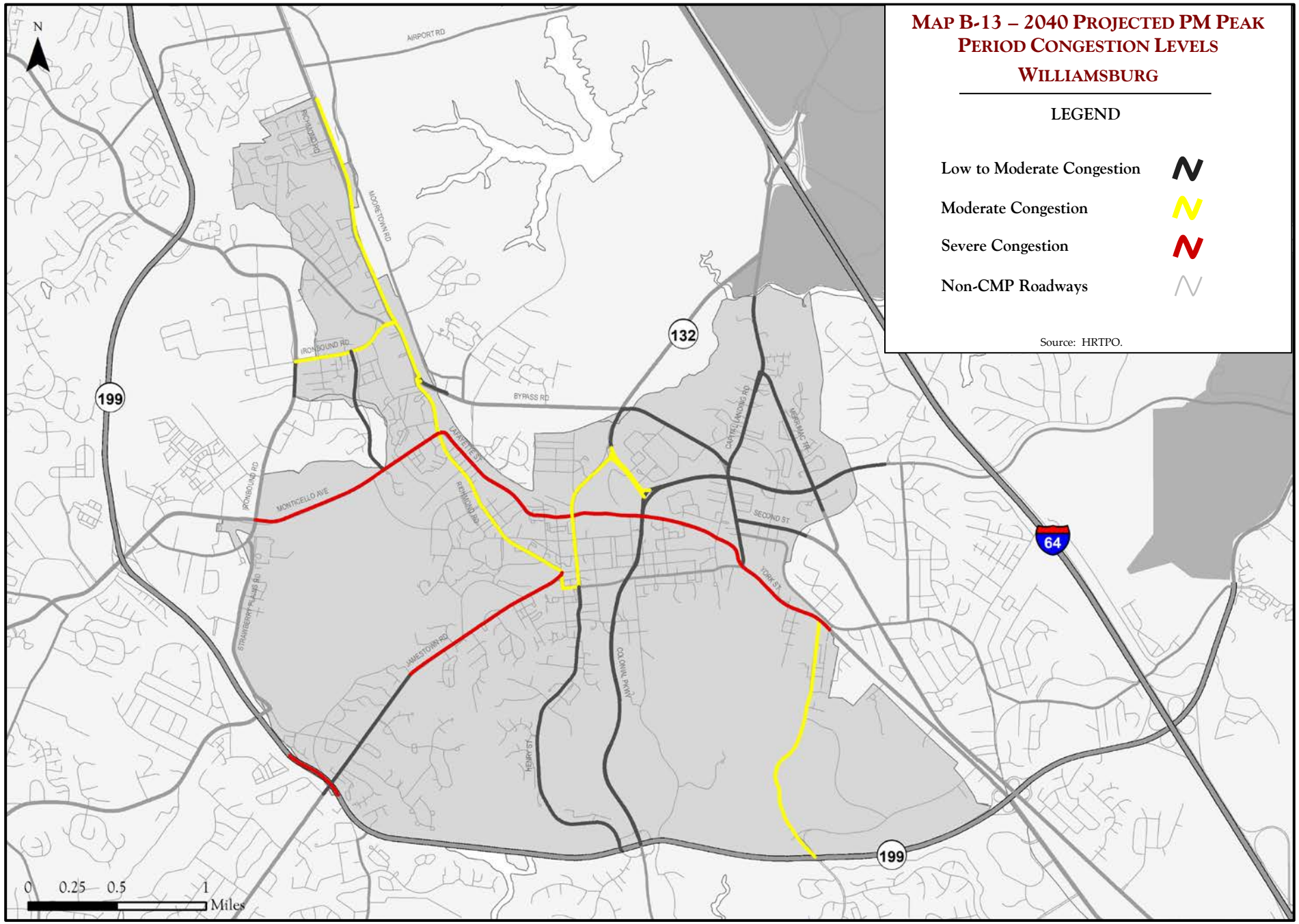
- Good
- Fair
- Poor/Structurally Deficient

Source: HRTPO analysis of VDOT and FHWA data. Data as of January 2019.


MAP B-10
2017 WEEKDAY TRUCK VOLUMES
WILLIAMSBURG
LEGEND
0 – 249
250 – 499
500 – 999
1,000 – 1,499
1,500 – 1,999
2,000 – 2,499
2,500 +
Prepared by HRTPO Staff. Data source: VDOT.
N
WILLIAMSBURG
0 0.2 0.4 0.8
Miles
64
199


MAP B-11
2017 WEEKDAY TRUCK PERCENTAGES
WILLIAMSBURG
LEGEND
0% –1.0%
1.1% – 2.0%
2.1% – 4.0%
4.1% – 6.0%
6.1% – 8.0%
8.1% – 10.0%
10.1% – 12.0%
Prepared by HRTPO Staff. Data source: VDOT.
N
WILLIAMSBURG
64
199
0 0.2 0.4 0.8
Miles


N
AIRPORT RD
RICHMOND RD
MOORETOWN RD
IRONBOUND RD
BYPASS RD
LAFAYETTE ST
MONTICELLO AVE
STRAWBERRY PLAINS RD
JAMESTOWN RD
RICHMOND RD
CAPITOL LANDING RD
ARMISTEAD DR
SECOND ST
YORK ST
COLONIAL PKWY
HENRY ST
199
132
64
199
0 0.25 0.5 1 Miles
MAP B-12 - 2040 ANNUAL AVERAGE WEEKDAY TRAFFIC VOLUMES
WILLIAMSBURG
LEGEND
0 - 999
1,000 – 4,999
5,000 – 9,999
10,000 – 19,999
20,000 – 49,999
50,000 +
Prepared by HRTPO Staff.

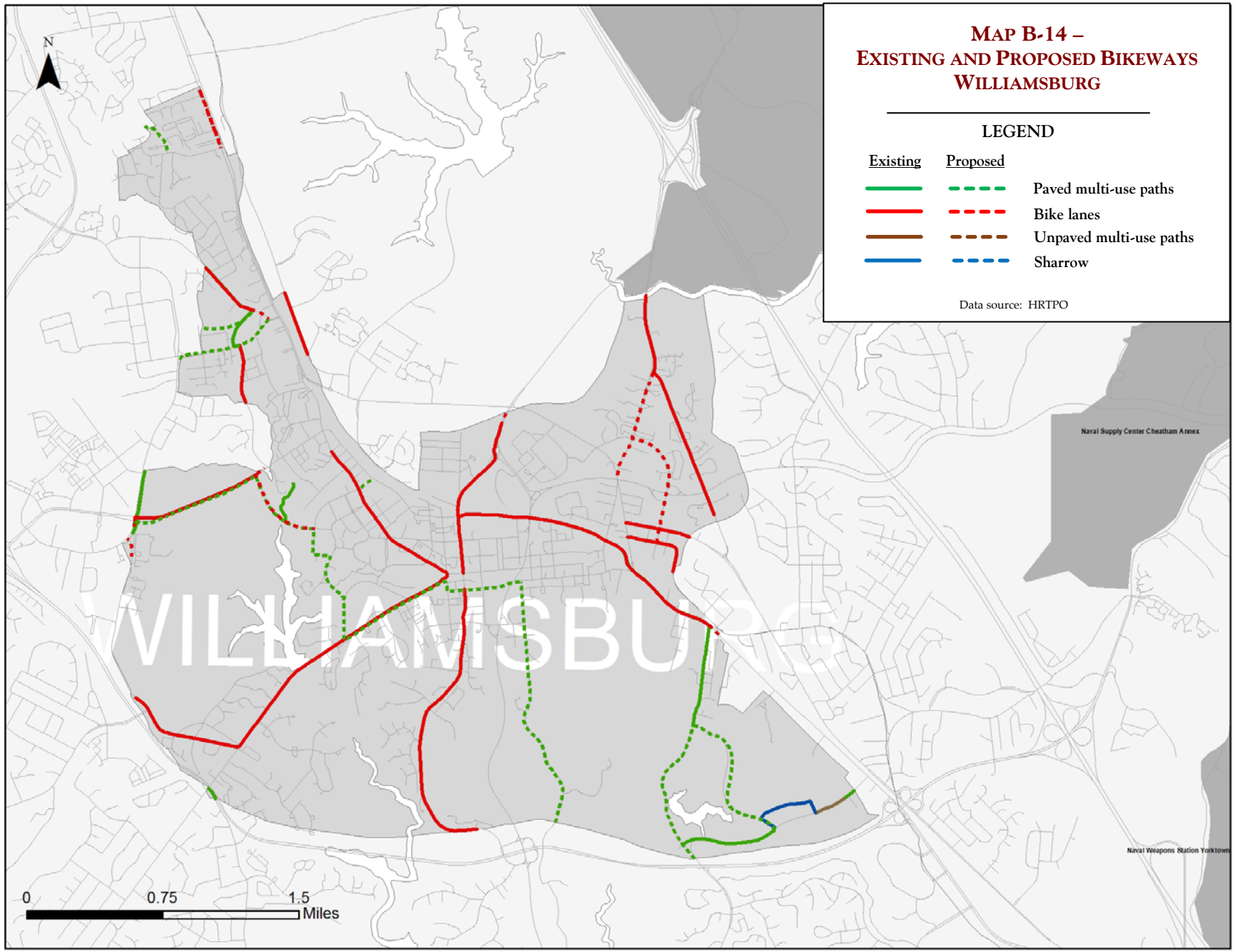


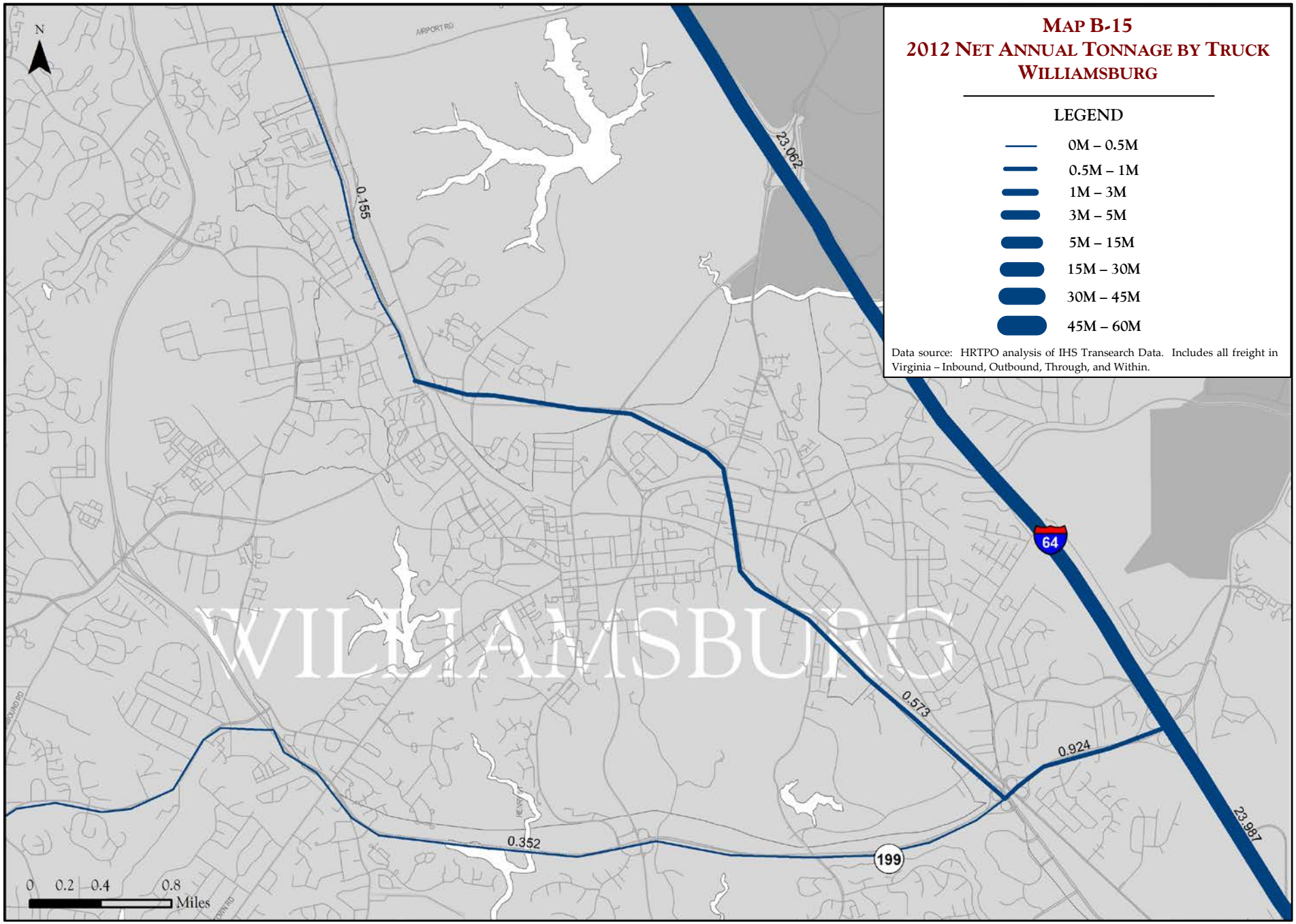
MAP B-13 – 2040 PROJECTED PM PEAK PERIOD CONGESTION LEVELS
WILLIAMSBURG

LEGEND

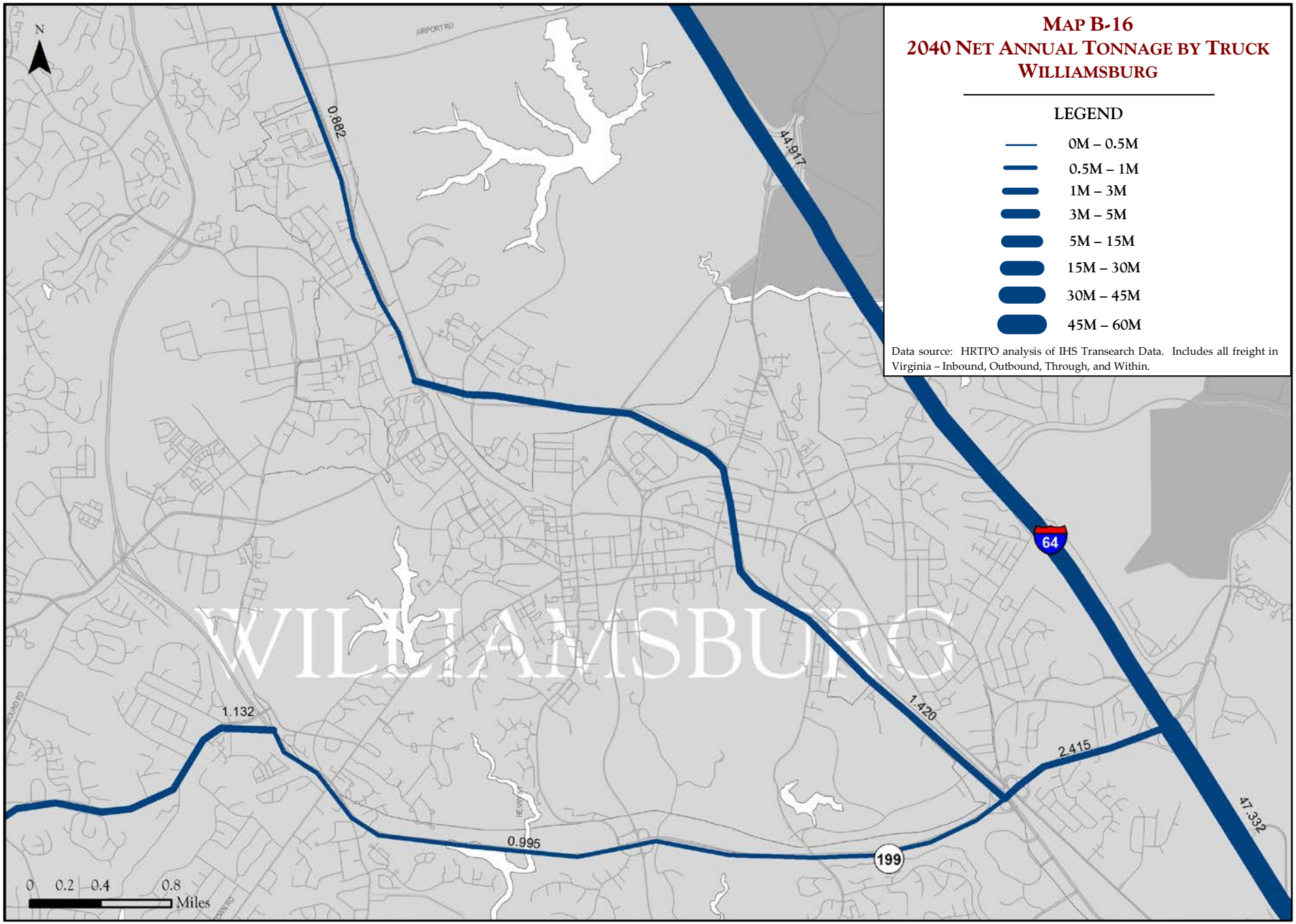
- Low to Moderate Congestion
- Moderate Congestion
- Severe Congestion
- Non-CMP Roadways

Source: HRTPO.


N
MAP B-14 –
EXISTING AND PROPOSED BIKEWAYS
WILLIAMSBURG
LEGEND
Existing
Proposed
Paved multi-use paths
Bike lanes
Unpaved multi-use paths
Sharrow
Data source: HRTPO
Naval Supply Center Cheatham Annex
Naval Weapons Station Yorktown
WILLIAMSBURG
0
0.75
1.5
Miles



MAP B-15
2012 NET ANNUAL TONNAGE BY TRUCK
WILLIAMSBURG

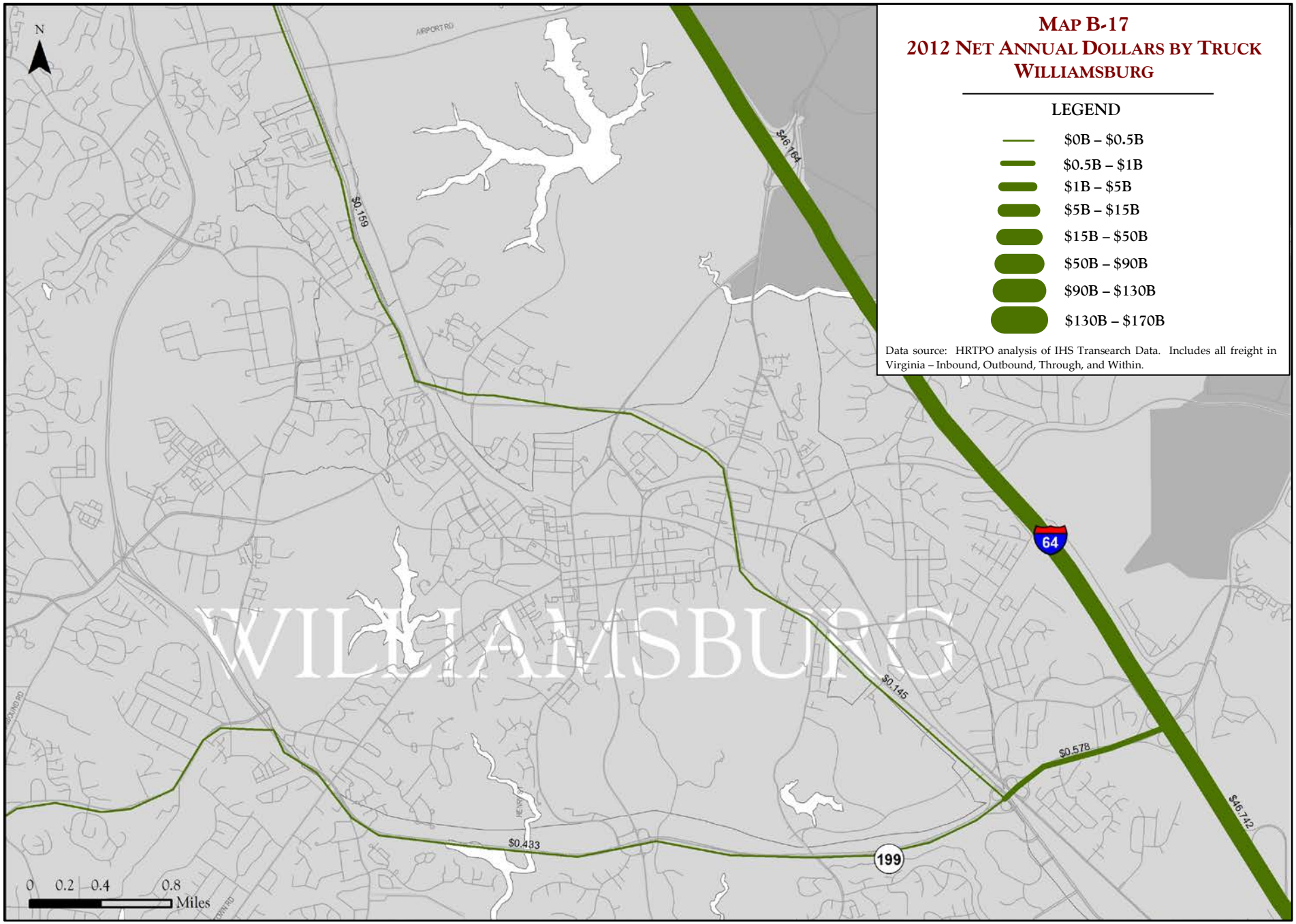


MAP B-16
2040 NET ANNUAL TONNAGE BY TRUCK
WILLIAMSBURG

LEGEND

- 0M – 0.5M
- 0.5M – 1M
- 1M – 3M
- 3M – 5M
- 5M – 15M
- 15M – 30M
- 30M – 45M
- 45M – 60M

Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

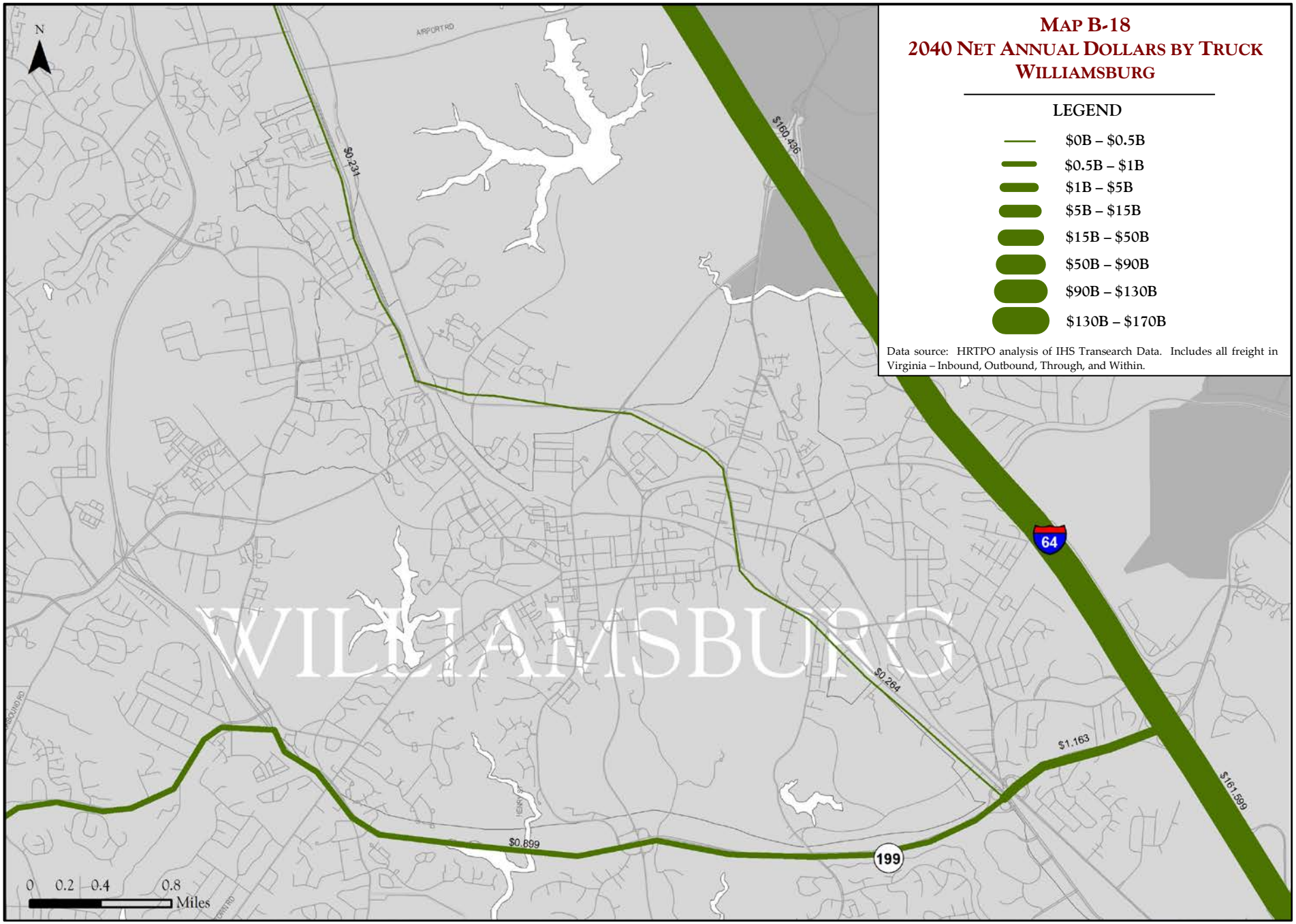


MAP B-17
2012 NET ANNUAL DOLLARS BY TRUCK
WILLIAMSBURG

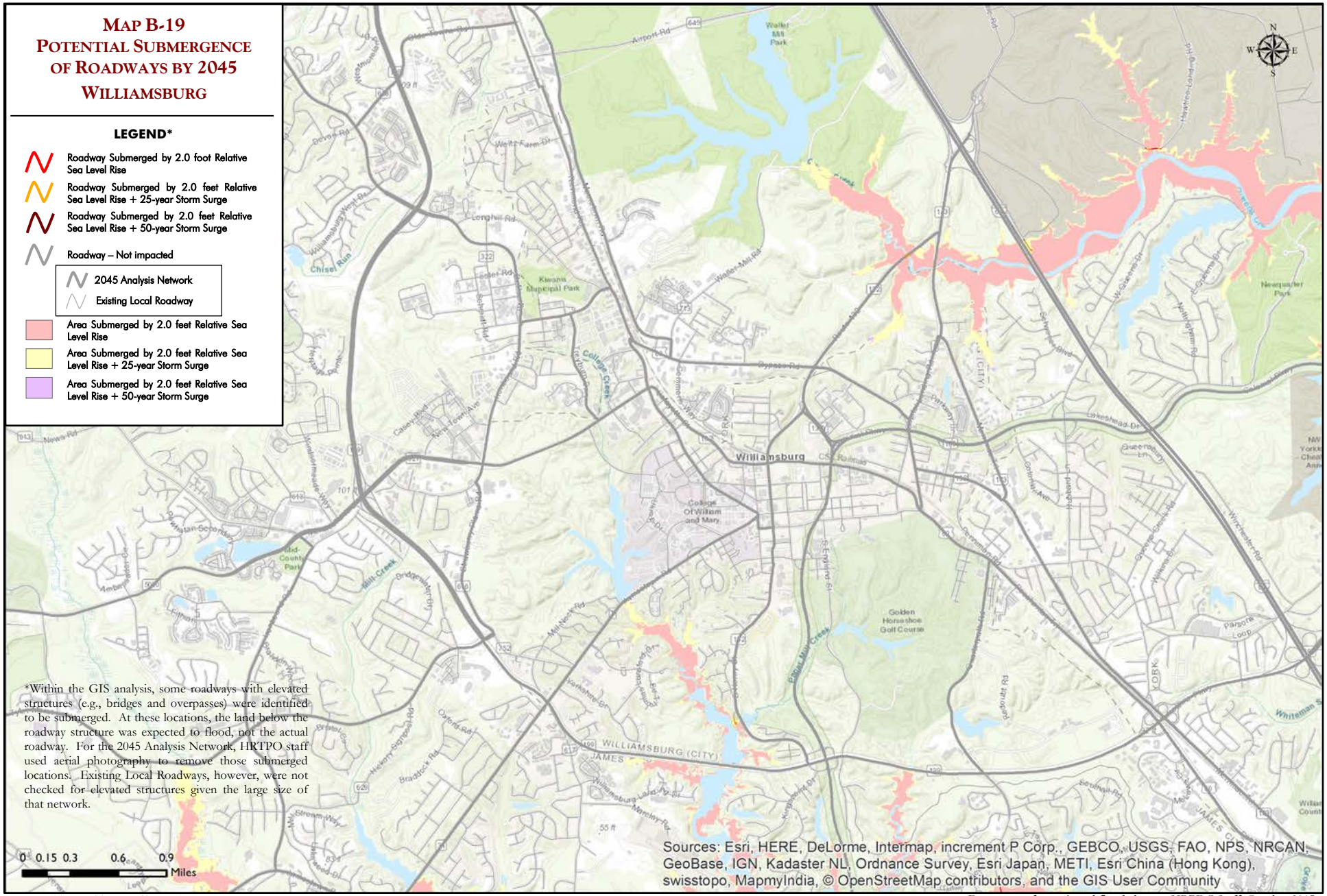
LEGEND

- $0B – $0.5B
- $0.5B – $1B
- $1B – $5B
- $5B – $15B
- $15B – $50B
- $50B – $90B
- $90B – $130B
- $130B – $170B

Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

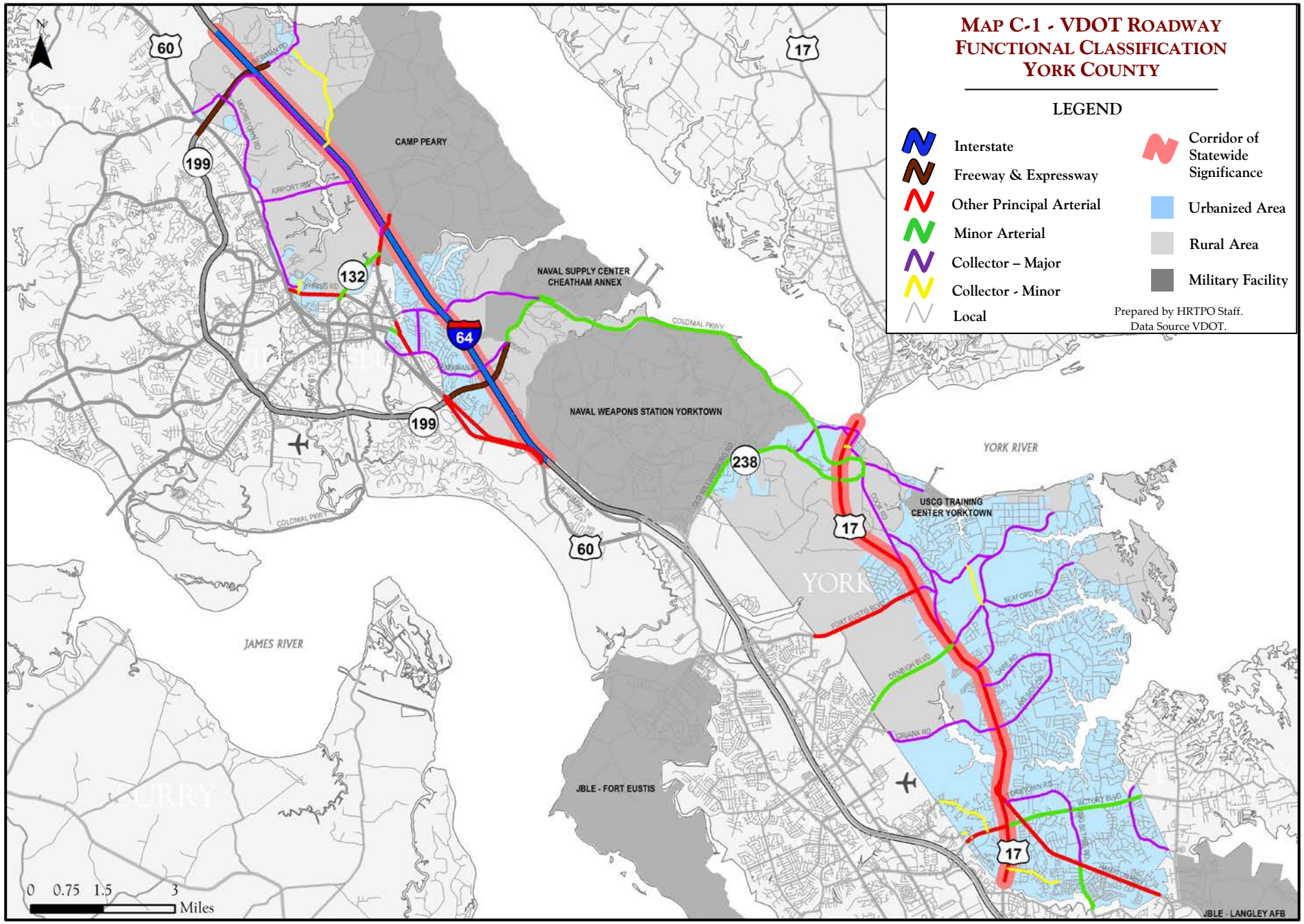

N
AIRPORT RD
$0.231
$160.436
64
$0.264
$1.163
$161.599
$0.899
199
WILLIAMSBURG
0 0.2 0.4 0.8
Miles
MAP B-18
2040 NET ANNUAL DOLLARS BY TRUCK
WILLIAMSBURG
LEGEND
$0B – $0.5B
$0.5B – $1B
$1B – $5B
$5B – $15B
$15B – $50B
$50B – $90B
$90B – $130B
$130B – $170B
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

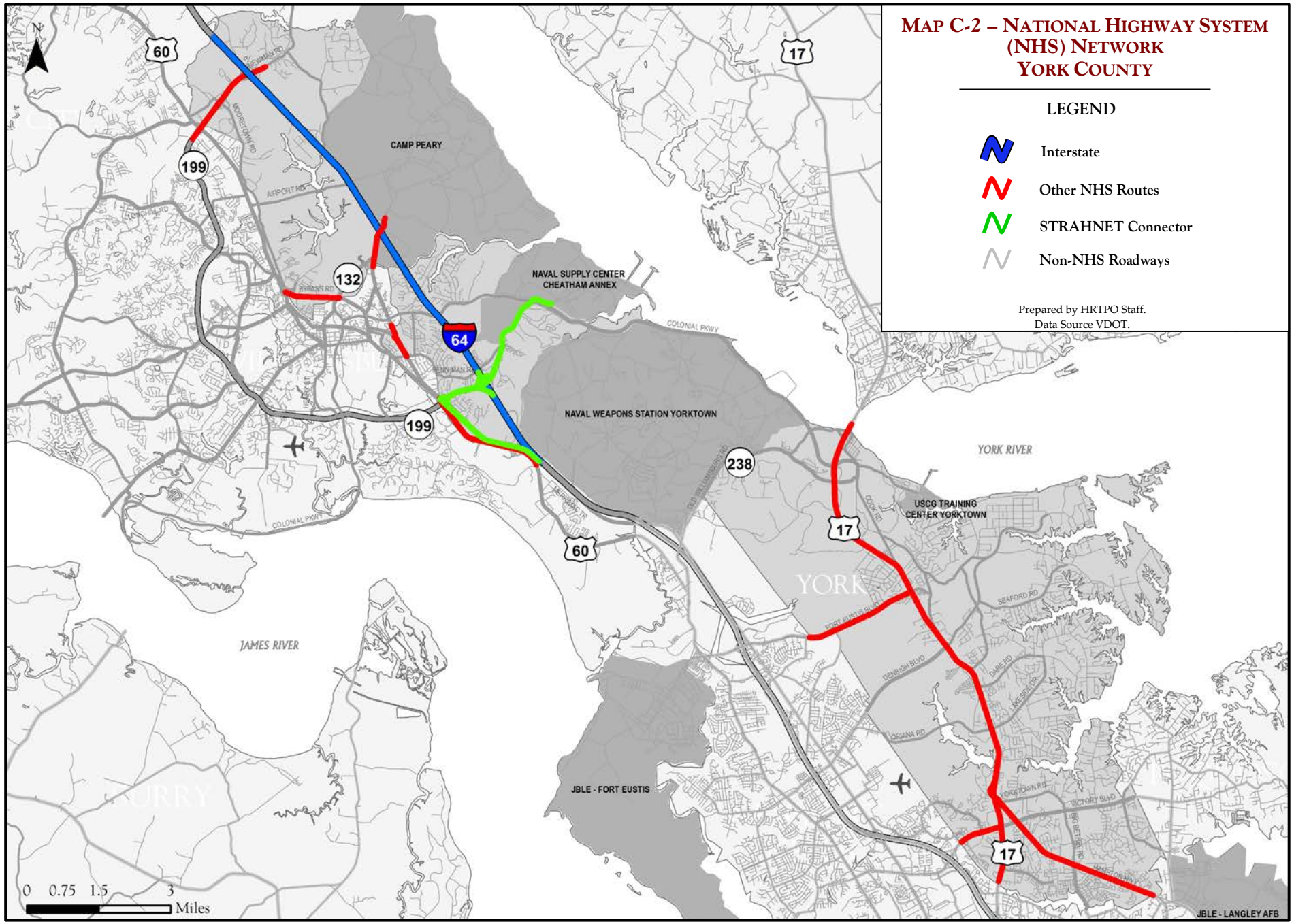
MAP B-19
POTENTIAL SUBMERGENCE OF ROADWAYS BY 2045
WILLIAMSBURG

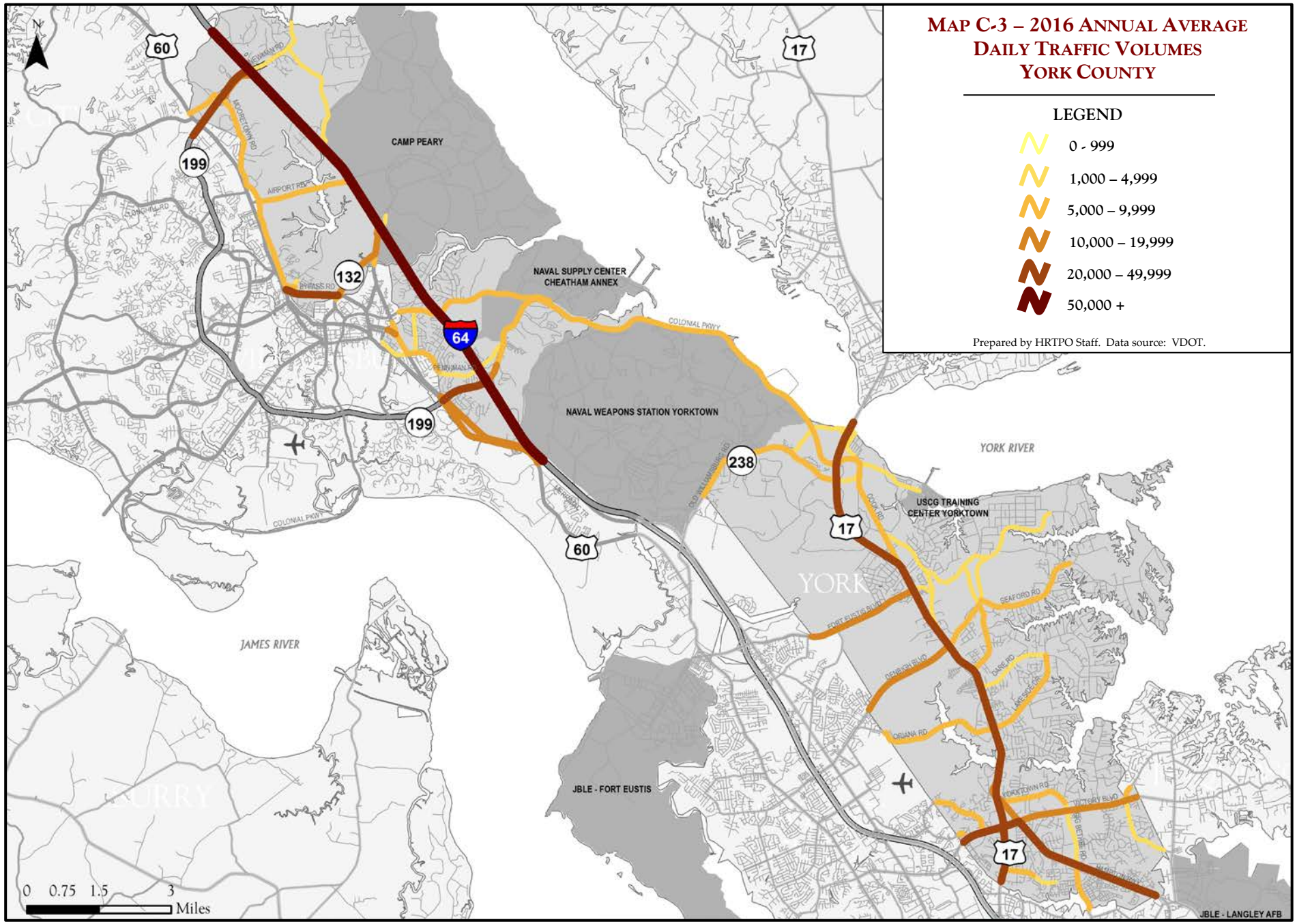


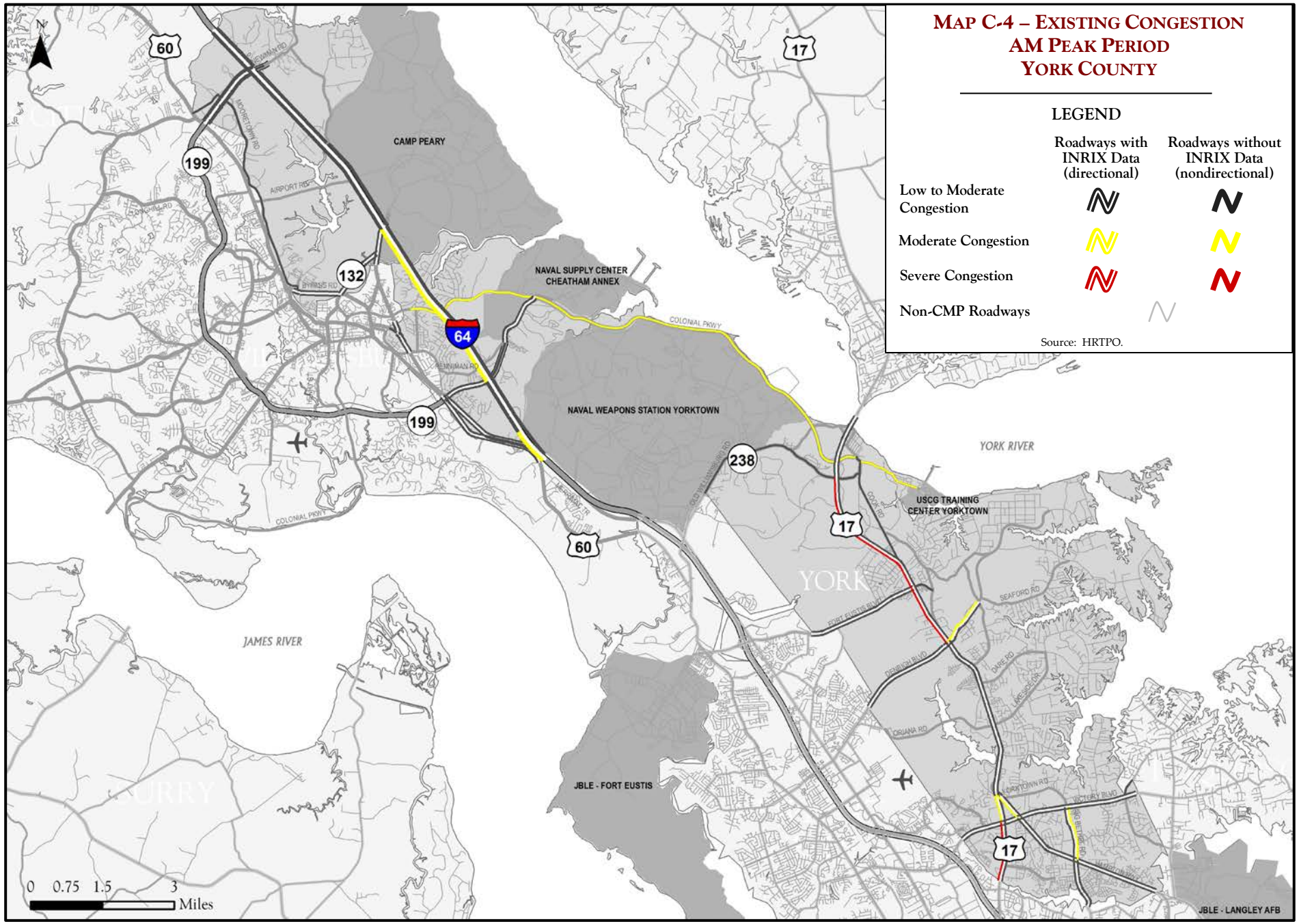
Prepared by: HRTPO Staff, October 2015

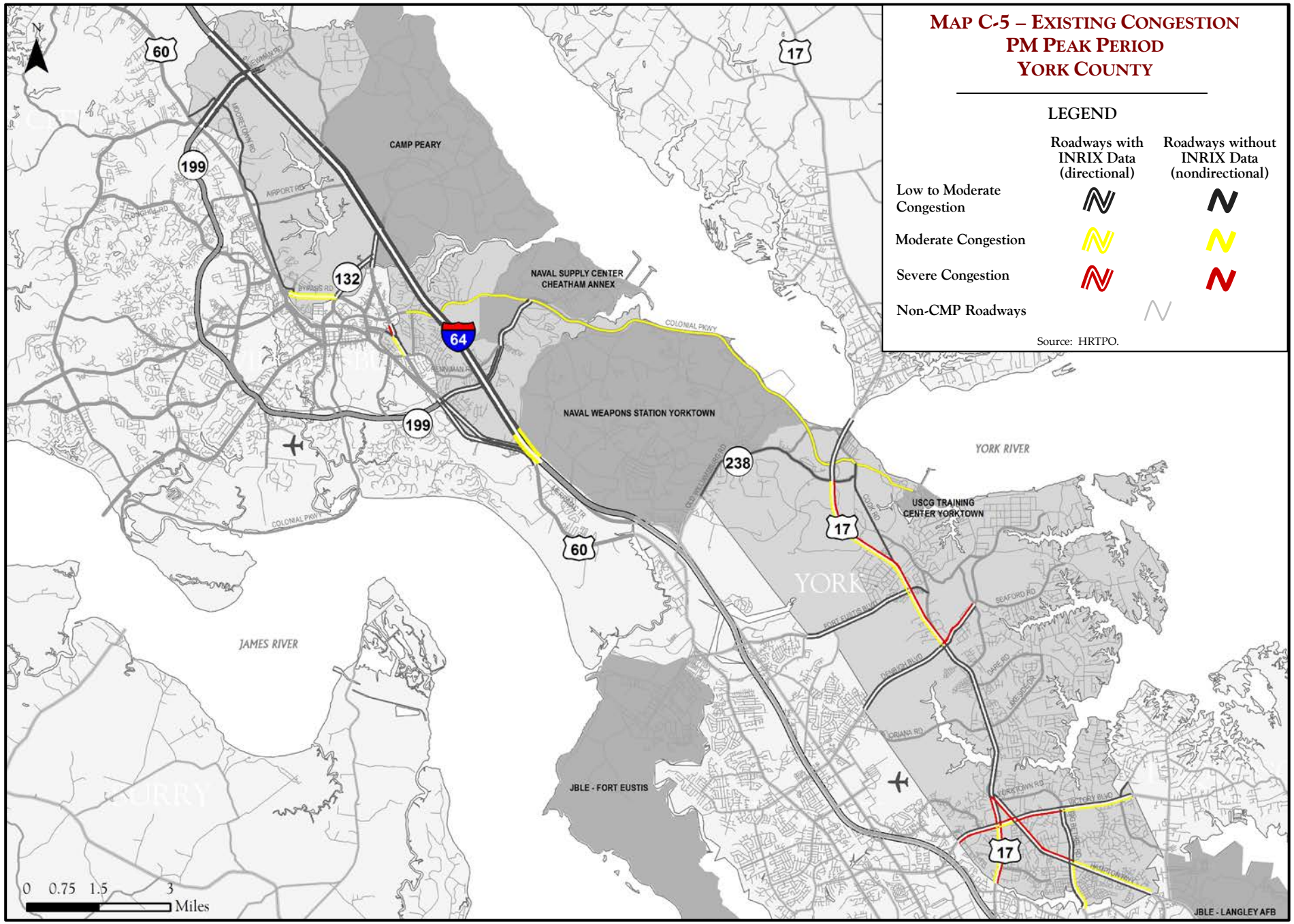
Data source for projected flooded areas: HRPDC Staff, October 2015

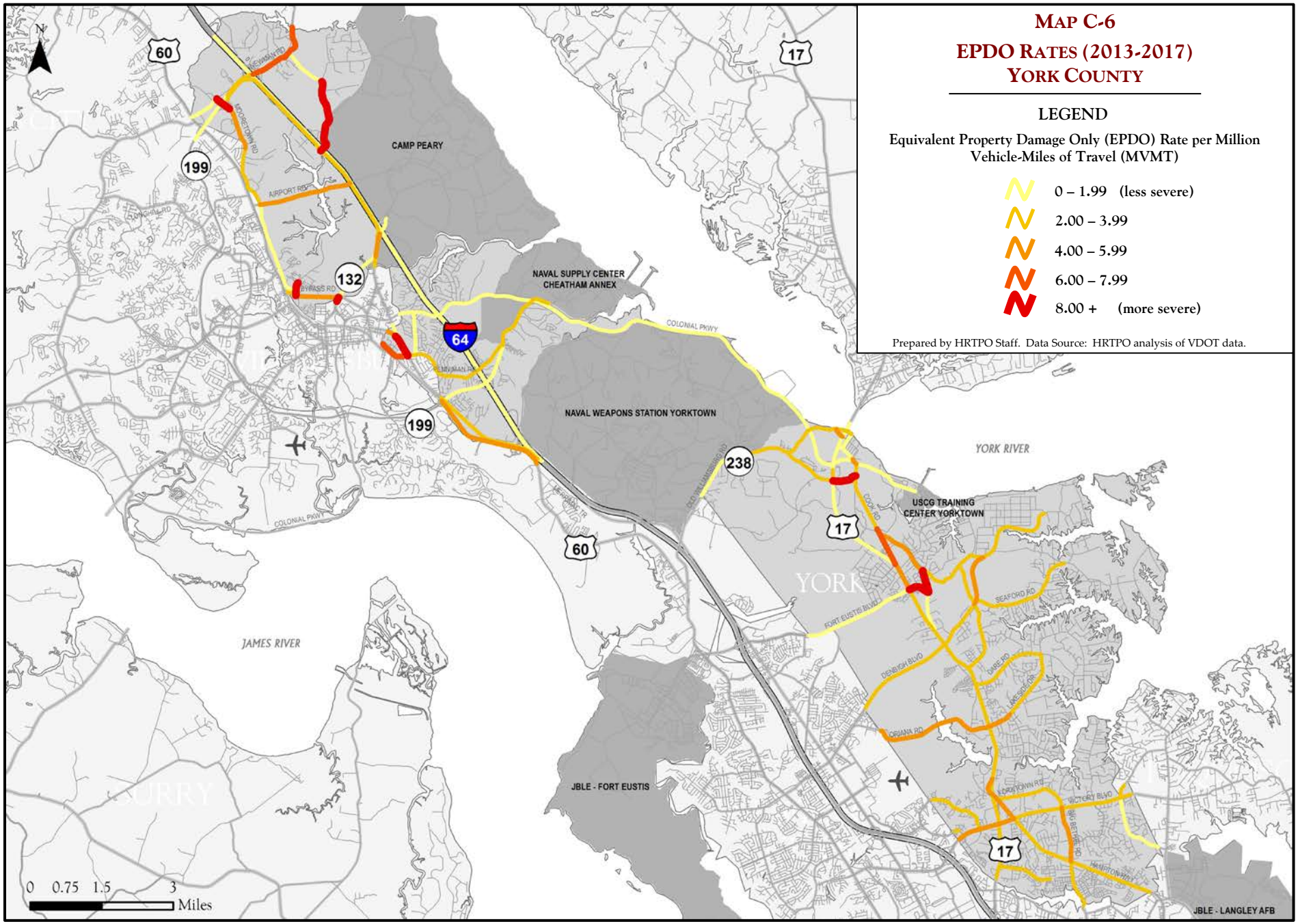

MAP C-1 - VDOT ROADWAY FUNCTIONAL CLASSIFICATION YORK COUNTY
LEGEND
Interstate
Freeway & Expressway
Other Principal Arterial
Minor Arterial
Collector – Major
Collector - Minor
Local
Corridor of Statewide Significance
Urbanized Area
Rural Area
Military Facility
Prepared by HRTPO Staff.
Data Source VDOT.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
YORK RIVER
JAMES RIVER
YORK
COLONIAL PKWY
COLONIAL PKWY
60
199
132
64
199
60
238
17
17
17
0 0.75 1.5 3 Miles

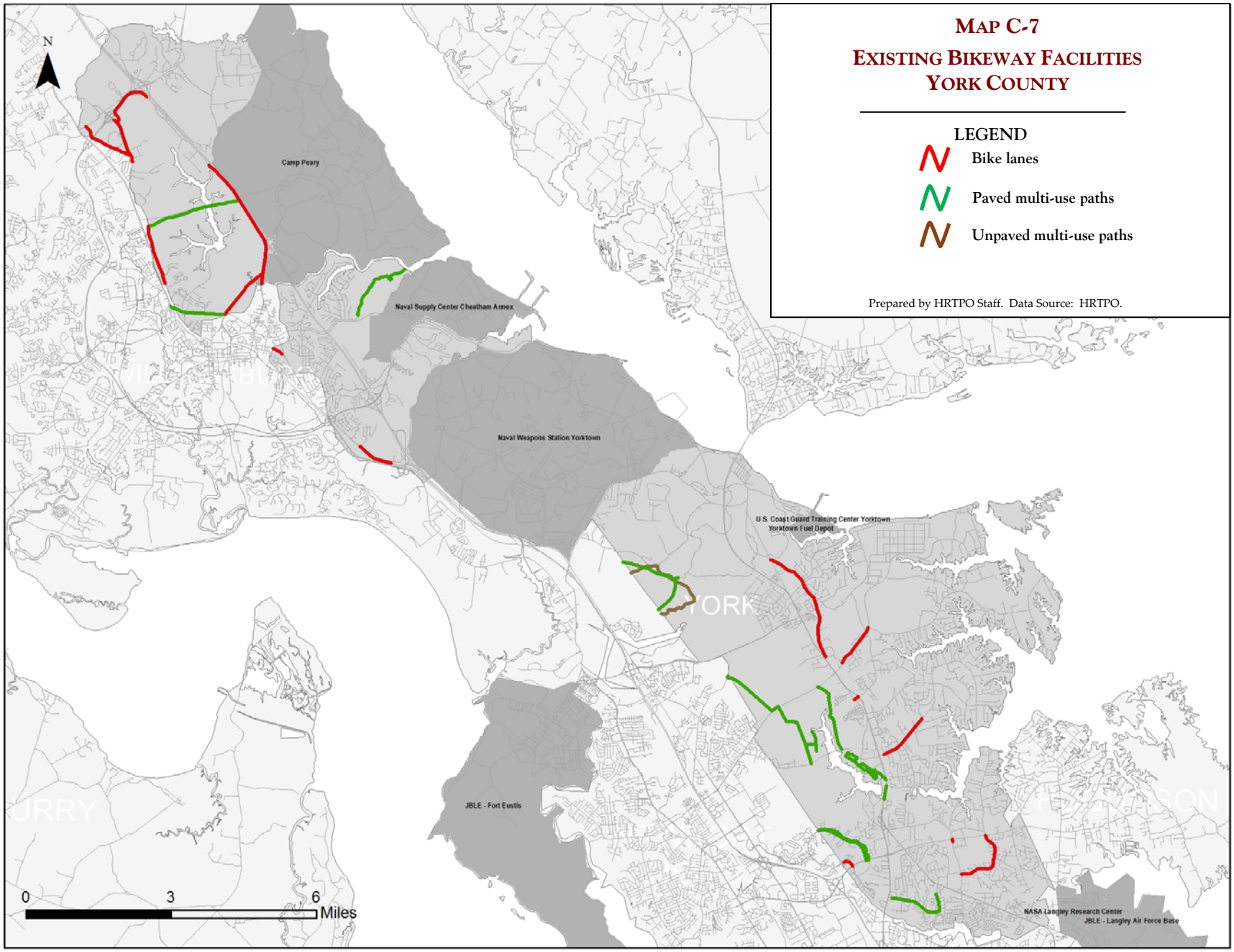

MAP C-2 – NATIONAL HIGHWAY SYSTEM (NHS) NETWORK
YORK COUNTY
LEGEND
Interstate
Other NHS Routes
STRAHNET Connector
Non-NHS Roadways
Prepared by HRTPO Staff.
Data Source VDOT.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
YORK
COLONIAL PKWY
0 0.75 1.5 3 Miles


MAP C-3 – 2016 ANNUAL AVERAGE DAILY TRAFFIC VOLUMES YORK COUNTY
LEGEND
0 - 999
1,000 – 4,999
5,000 – 9,999
10,000 – 19,999
20,000 – 49,999
50,000 +
Prepared by HRTPO Staff. Data source: VDOT.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
USCG TRAINING CENTER YORKTOWN
YORK RIVER
JAMES RIVER
COLONIAL PKWY
60
17
199
132
64
238
0 0.75 1.5 3 Miles


MAP C-4 – EXISTING CONGESTION
AM PEAK PERIOD
YORK COUNTY
LEGEND
Roadways with INRIX Data (directional)
Roadways without INRIX Data (nondirectional)
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
YORK
COLONIAL PKWY
60
199
132
64
238
17
0 0.75 1.5 3
Miles


MAP C-5 – EXISTING CONGESTION
PM PEAK PERIOD
YORK COUNTY
LEGEND
Roadways with INRIX Data (directional)
Roadways without INRIX Data (nondirectional)
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
YORK RIVER
JAMES RIVER
COLONIAL PKWY
60
199
132
64
17
238
0 0.75 1.5 3 Miles


MAP C-6
EPDO RATES (2013-2017)
YORK COUNTY
LEGEND
Equivalent Property Damage Only (EPDO) Rate per Million Vehicle-Miles of Travel (MVMT)
0 – 1.99 (less severe)
2.00 – 3.99
4.00 – 5.99
6.00 – 7.99
8.00 + (more severe)
Prepared by HRTPO Staff. Data Source: HRTPO analysis of VDOT data.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
USCG TRAINING CENTER YORKTOWN
YORK RIVER
JAMES RIVER
COLONIAL PKWY
60
17
199
132
64
238
0 0.75 1.5 3 Miles

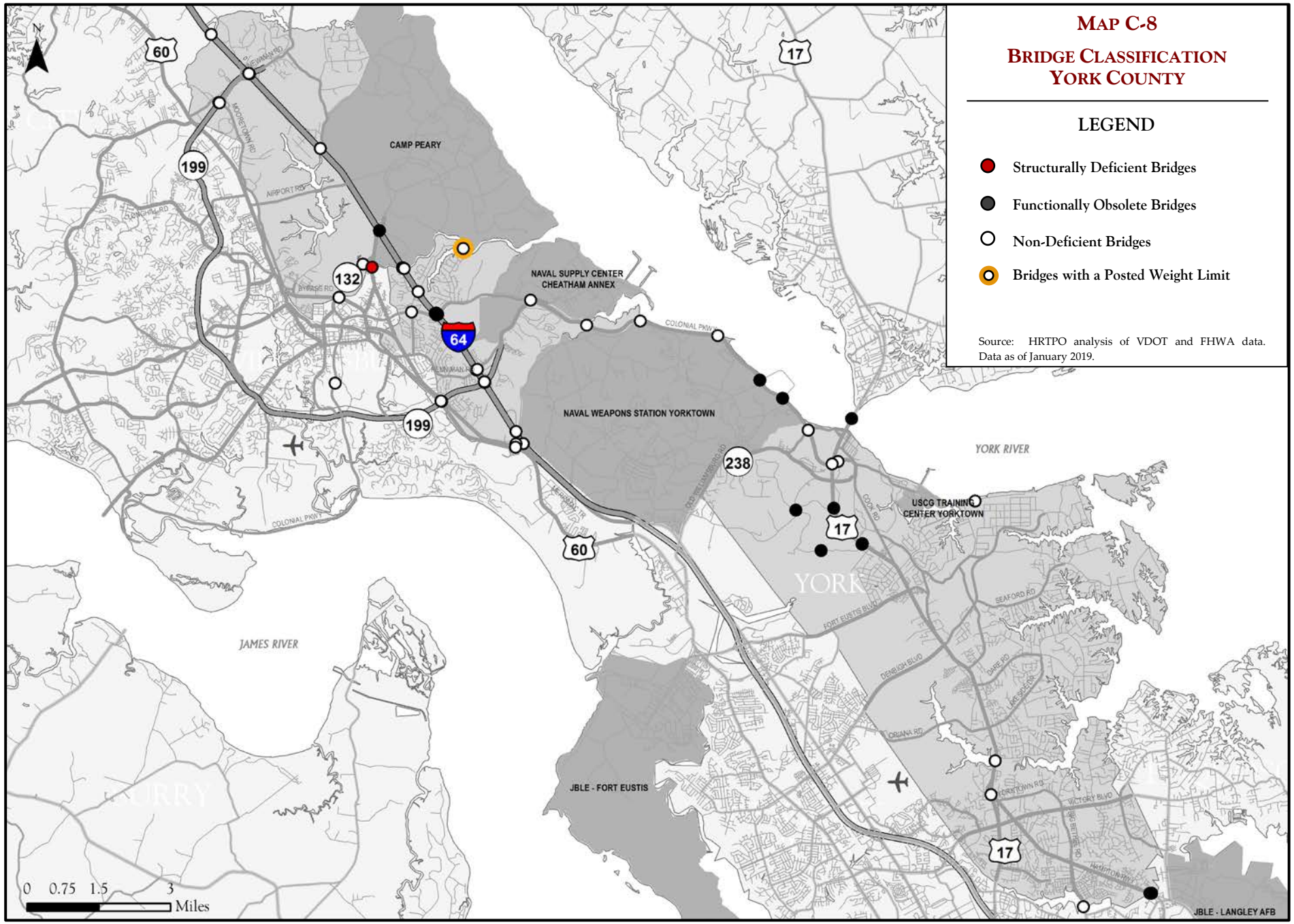


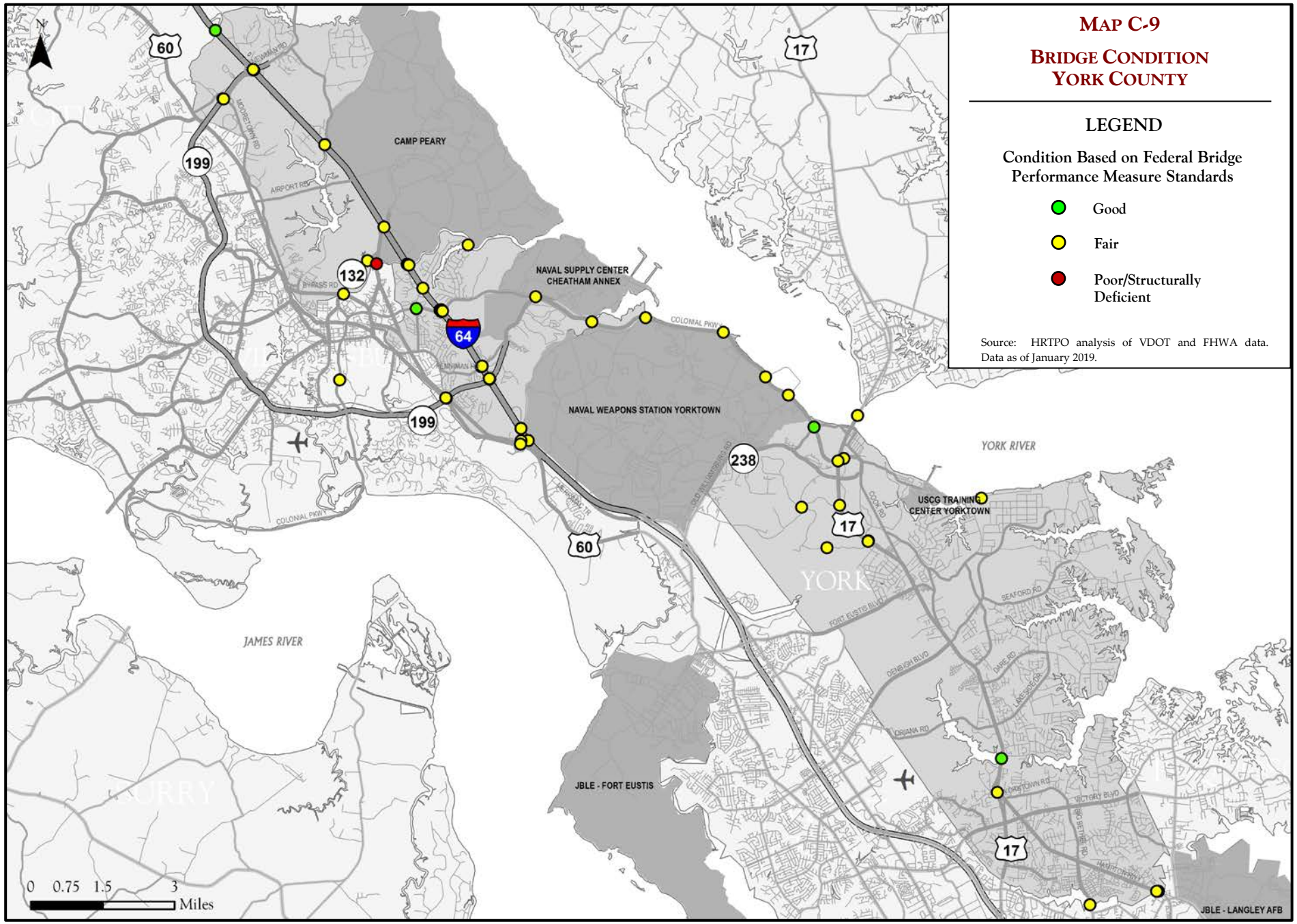
MAP C-7
EXISTING BIKEWAY FACILITIES
YORK COUNTY

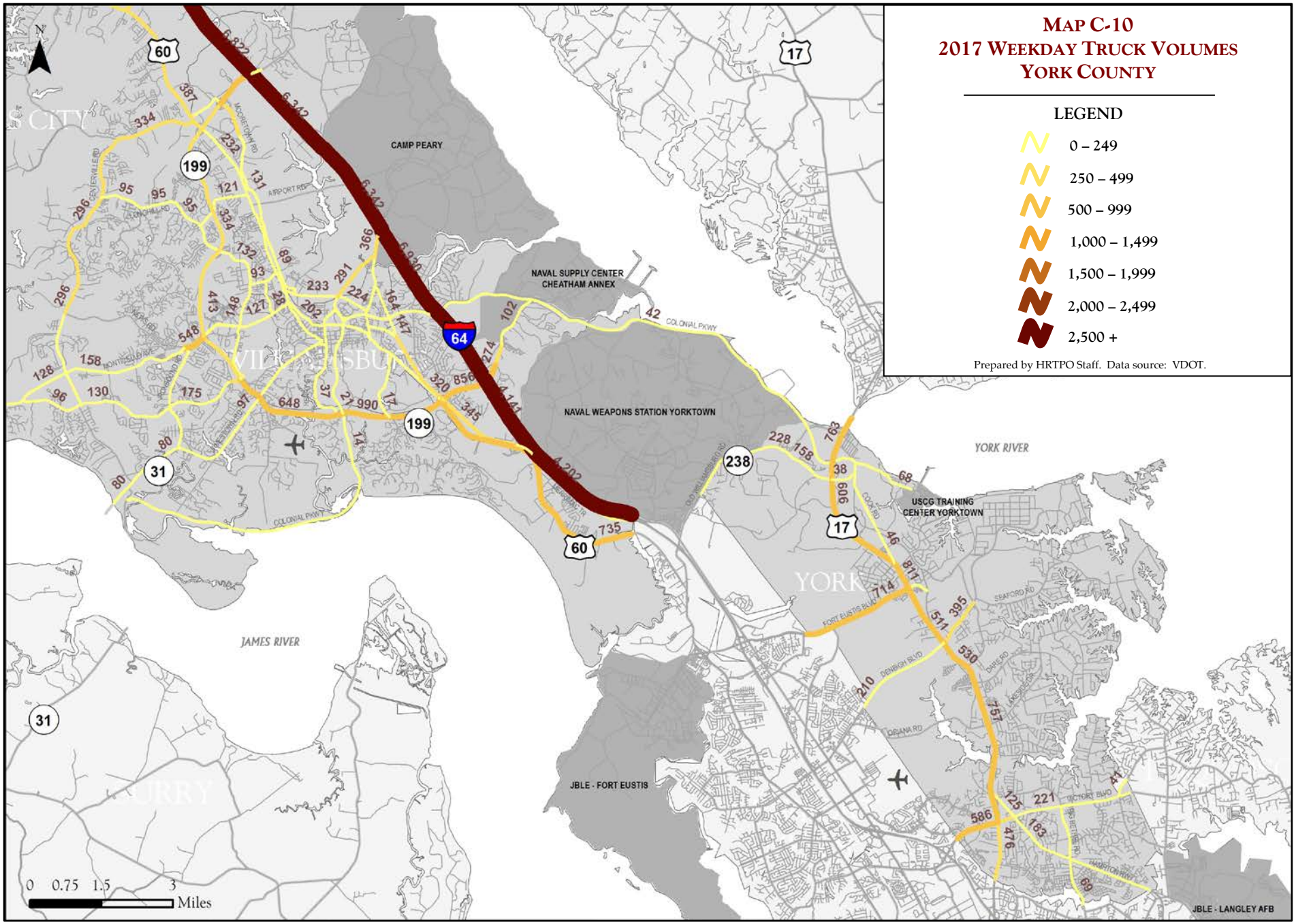
LEGEND

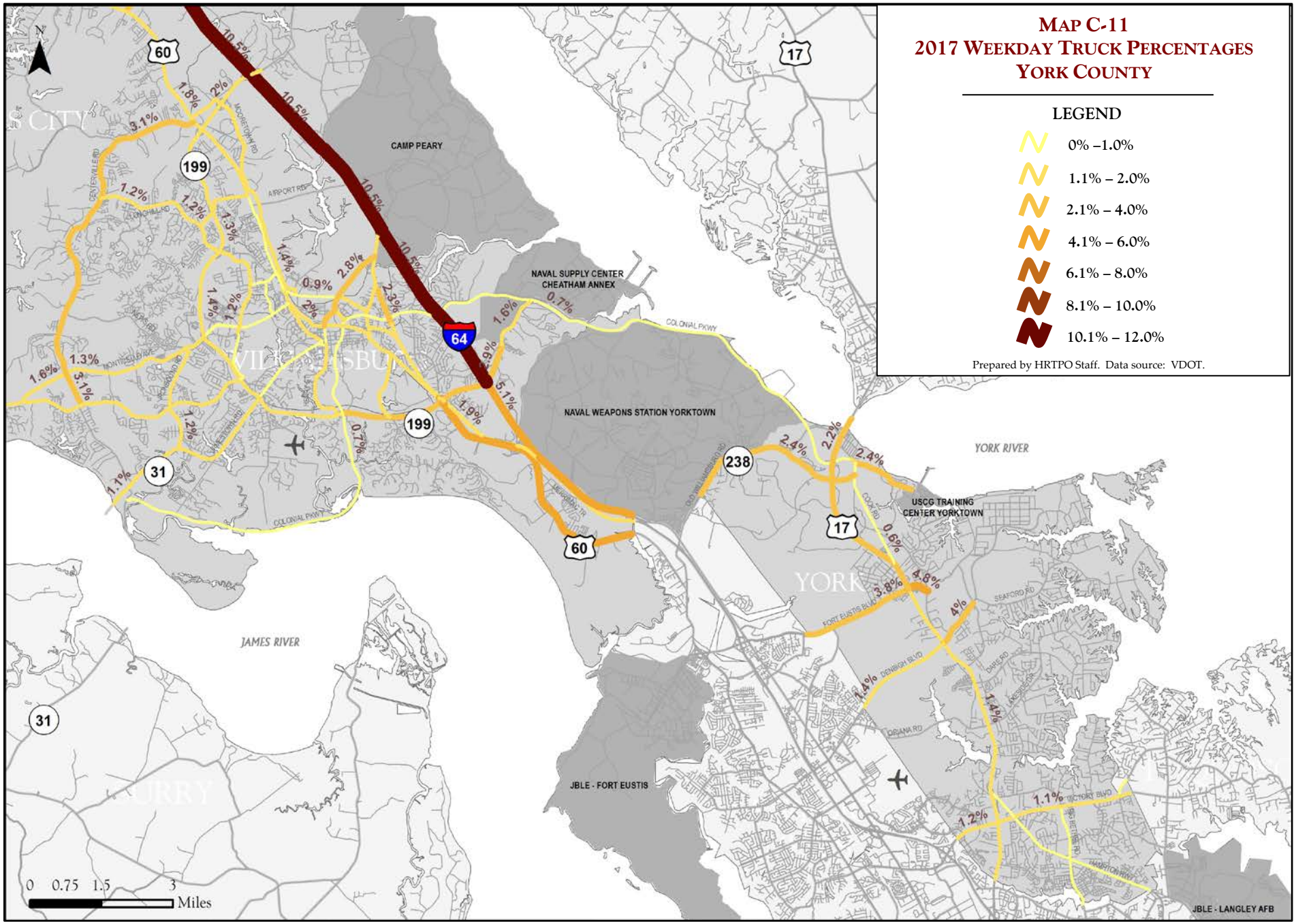
- Bike lanes
- Paved multi-use paths
- Unpaved multi-use paths

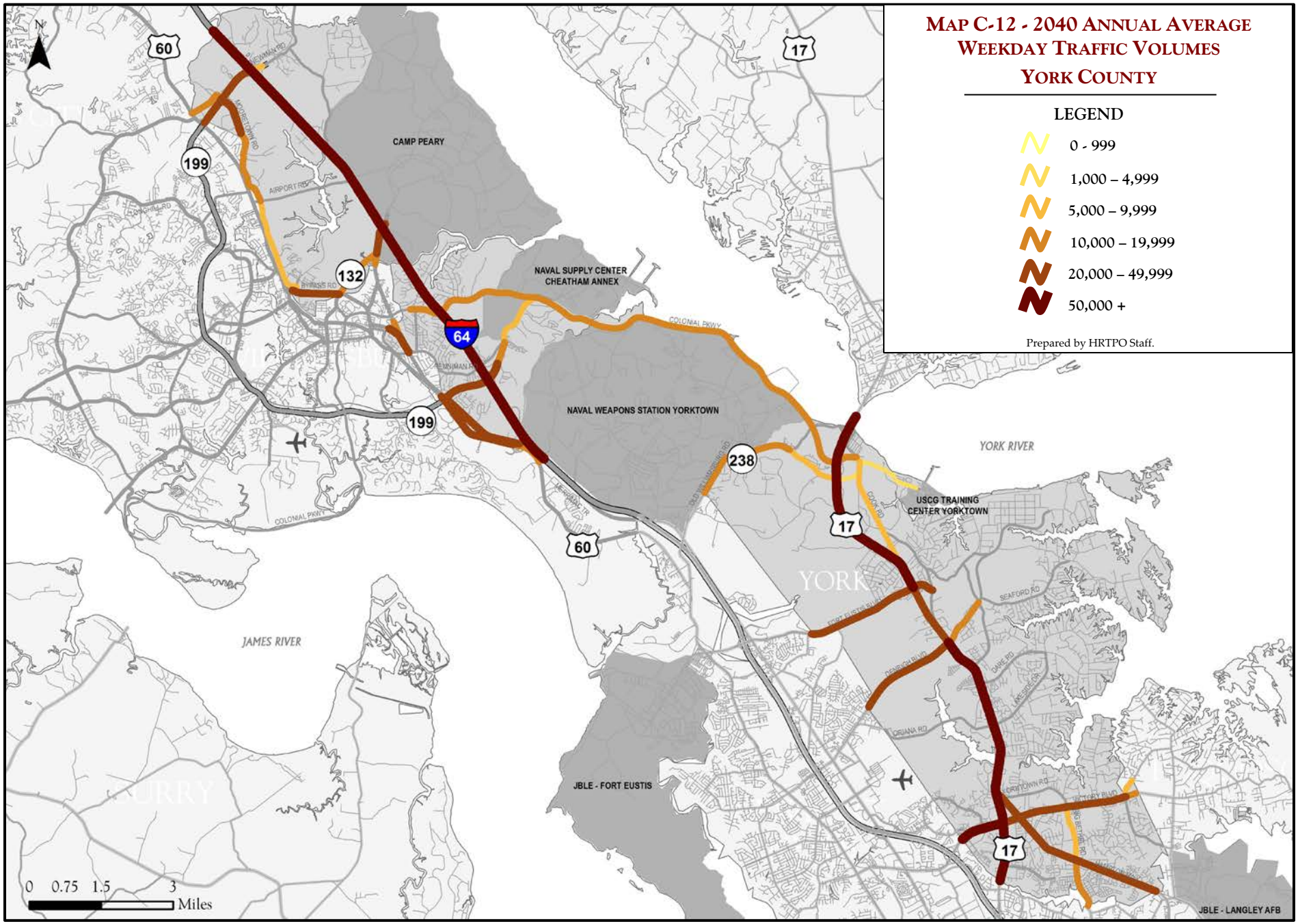
Prepared by HRTPO Staff. Data Source: HRTPO.

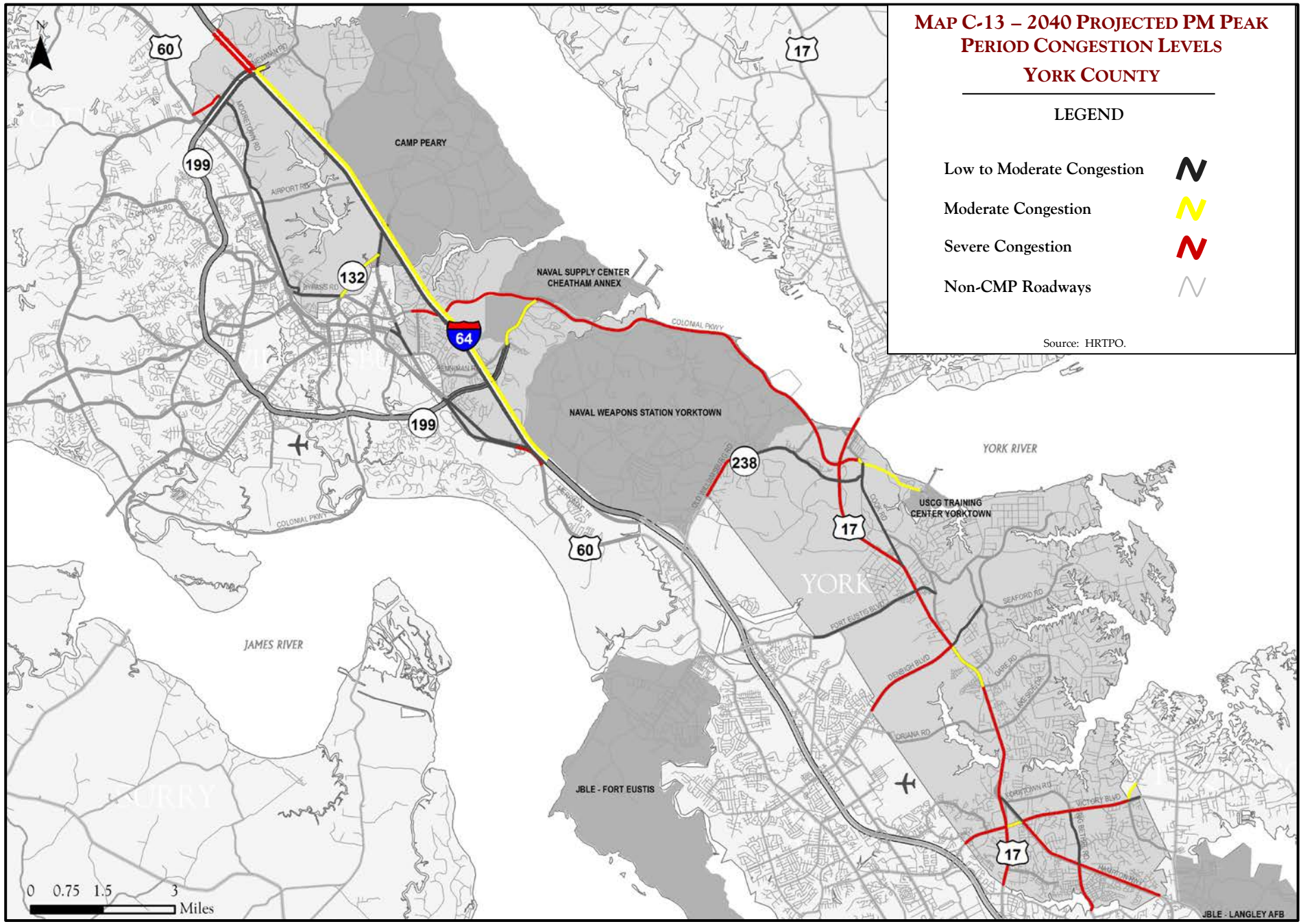

MAP C-8
BRIDGE CLASSIFICATION
YORK COUNTY
LEGEND
Structurally Deficient Bridges
Functionally Obsolete Bridges
Non-Deficient Bridges
Bridges with a Posted Weight Limit
Source: HRTPO analysis of VDOT and FHWA data. Data as of January 2019.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
USCG TRAINING CENTER YORKTOWN
YORK RIVER
JAMES RIVER
YORK
COLONIAL PKWY
60
17
199
132
64
238
0 0.75 1.5 3 Miles

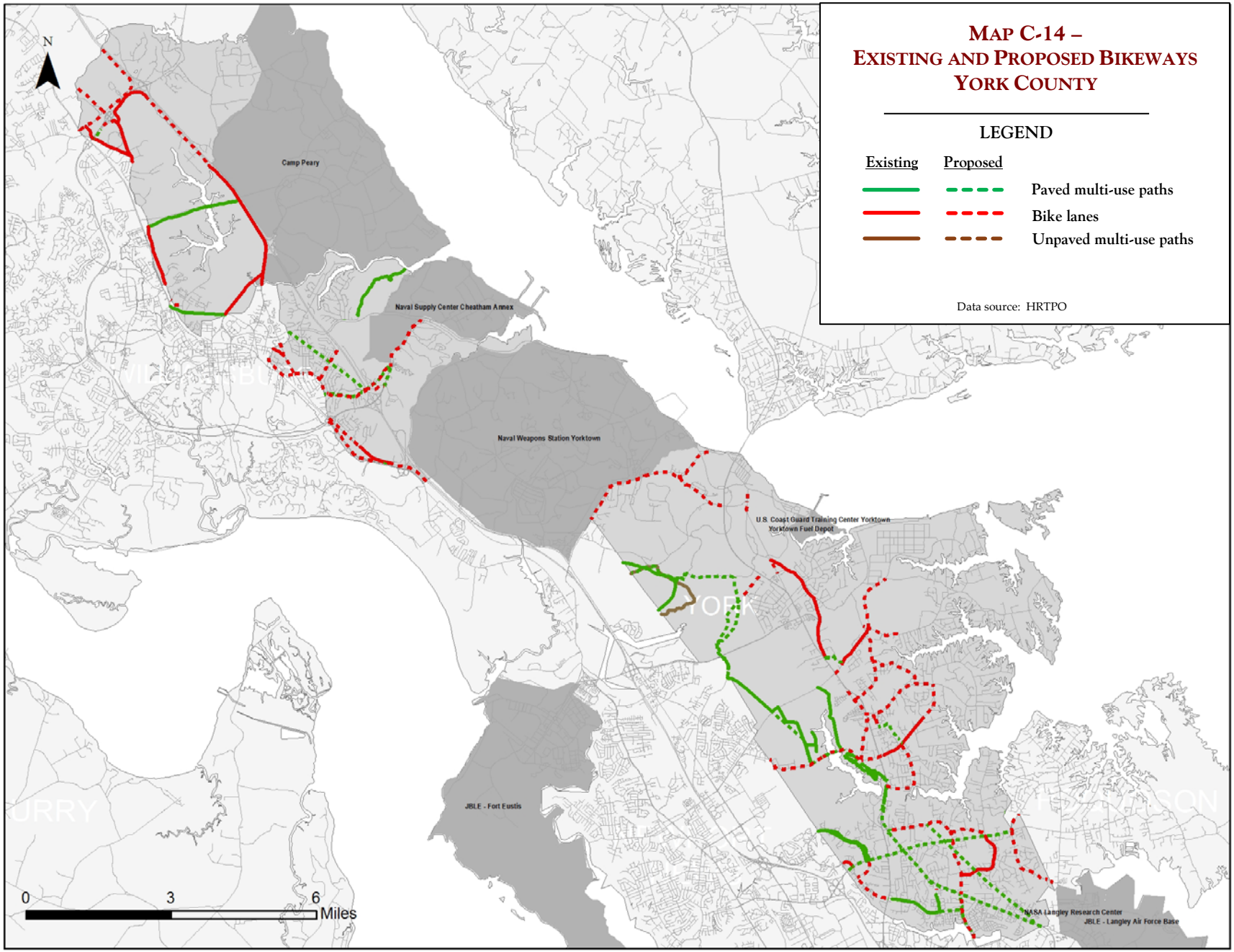

MAP C-9
BRIDGE CONDITION
YORK COUNTY
LEGEND
Condition Based on Federal Bridge Performance Measure Standards
Good
Fair
Poor/Structurally Deficient
Source: HRTPO analysis of VDOT and FHWA data. Data as of January 2019.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
USCG TRAINING CENTER YORKTOWN
JAMES RIVER
YORK RIVER
YORK
COLONIAL PKWY
60
199
132
64
17
238
0 0.75 1.5 3 Miles


MAP C-10
2017 WEEKDAY TRUCK VOLUMES
YORK COUNTY
LEGEND
0 – 249
250 – 499
500 – 999
1,000 – 1,499
1,500 – 1,999
2,000 – 2,499
2,500 +
Prepared by HRTPO Staff. Data source: VDOT.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
COLONIAL PKWY
0 0.75 1.5 3 Miles


MAP C-11
2017 WEEKDAY TRUCK PERCENTAGES
YORK COUNTY
LEGEND
0% –1.0%
1.1% – 2.0%
2.1% – 4.0%
4.1% – 6.0%
6.1% – 8.0%
8.1% – 10.0%
10.1% – 12.0%
Prepared by HRTPO Staff. Data source: VDOT.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
COLONIAL PKWY
0 0.75 1.5 3 Miles


MAP C-12 - 2040 ANNUAL AVERAGE WEEKDAY TRAFFIC VOLUMES
YORK COUNTY
LEGEND
0 - 999
1,000 – 4,999
5,000 – 9,999
10,000 – 19,999
20,000 – 49,999
50,000 +
Prepared by HRTPO Staff.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
JAMES RIVER
YORK RIVER
YORK
COLONIAL PKWY
60
17
199
132
64
238
0 0.75 1.5 3 Miles


MAP C-13 – 2040 PROJECTED PM PEAK PERIOD CONGESTION LEVELS
YORK COUNTY
LEGEND
Low to Moderate Congestion
Moderate Congestion
Severe Congestion
Non-CMP Roadways
Source: HRTPO.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
USCG TRAINING CENTER YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
YORK RIVER
JAMES RIVER
COLONIAL PKWY
60
17
199
132
64
238
0 0.75 1.5 3 Miles

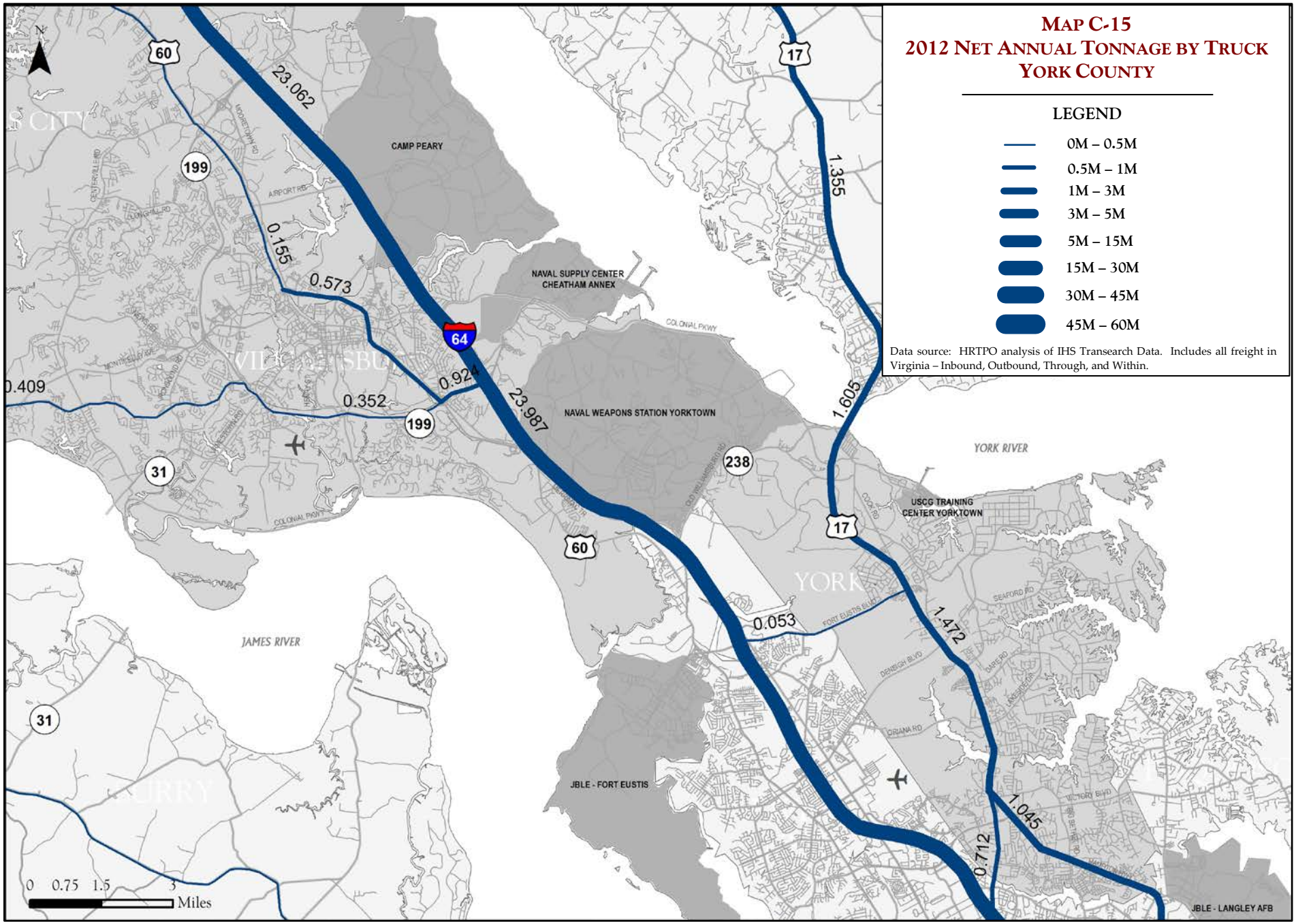


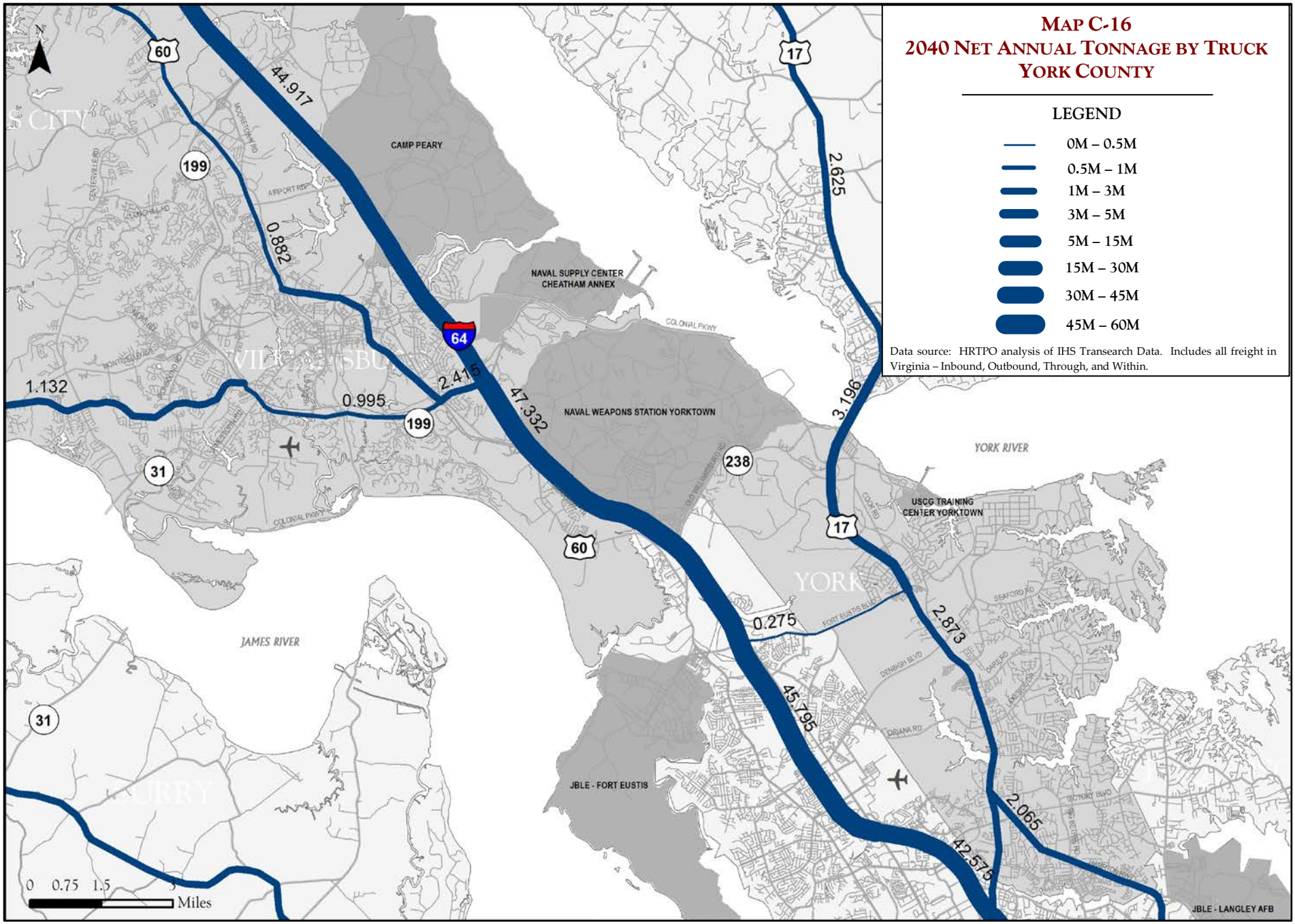
MAP C-14 – EXISTING AND PROPOSED BIKEWAYS YORK COUNTY

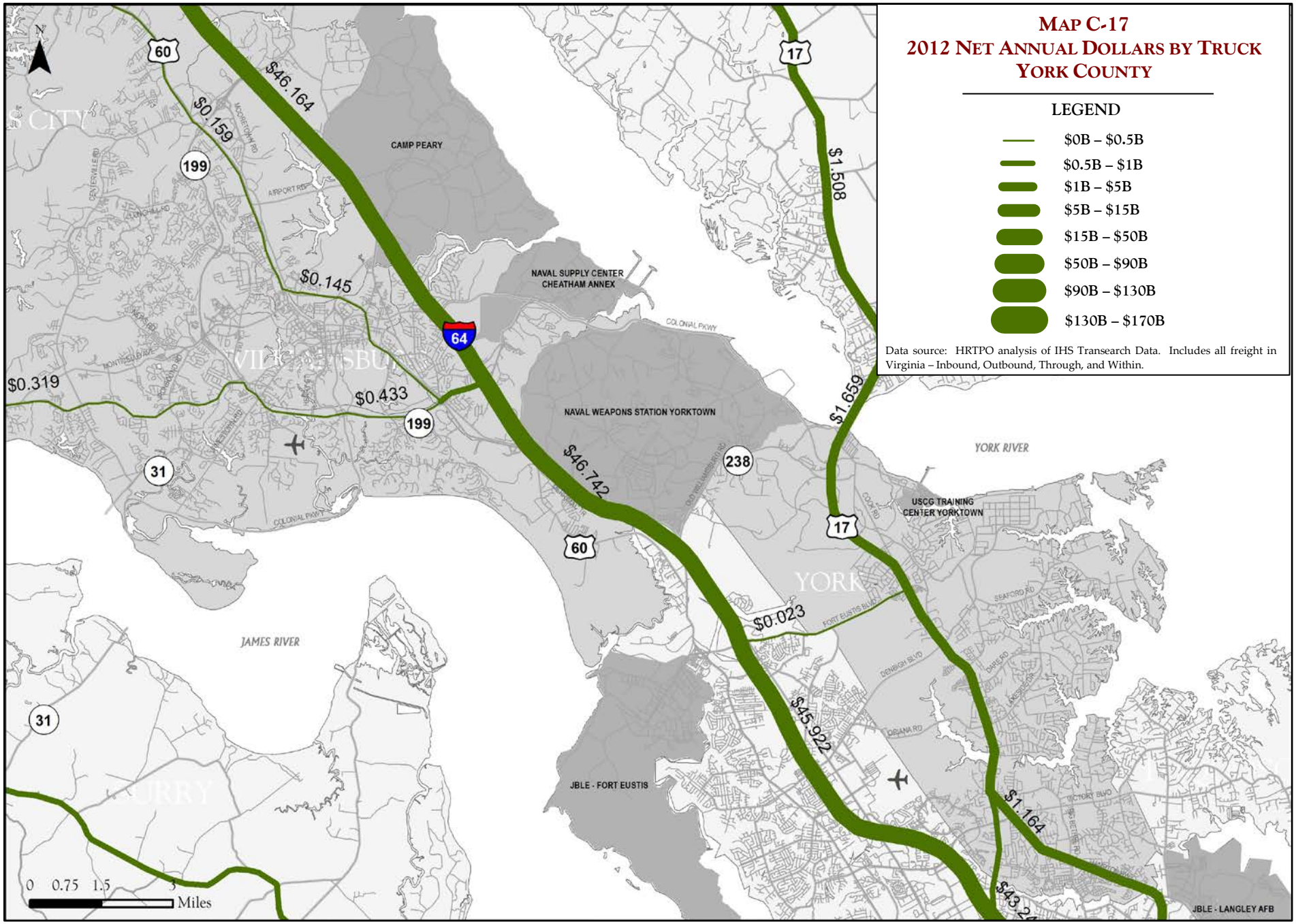
LEGEND

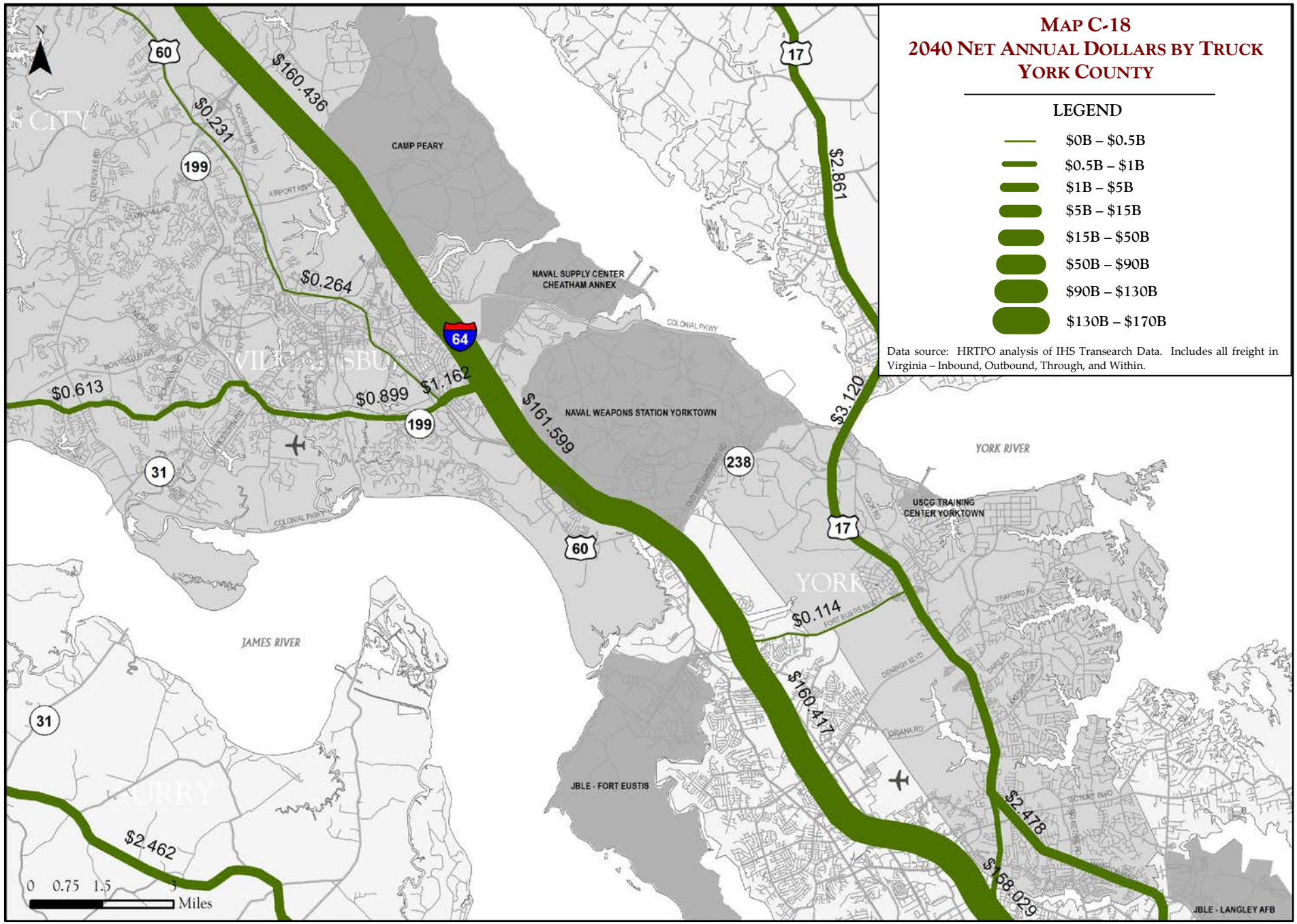
Existing	Proposed	
		Paved multi-use paths
		Bike lanes
		Unpaved multi-use paths

Data source: HRTPO

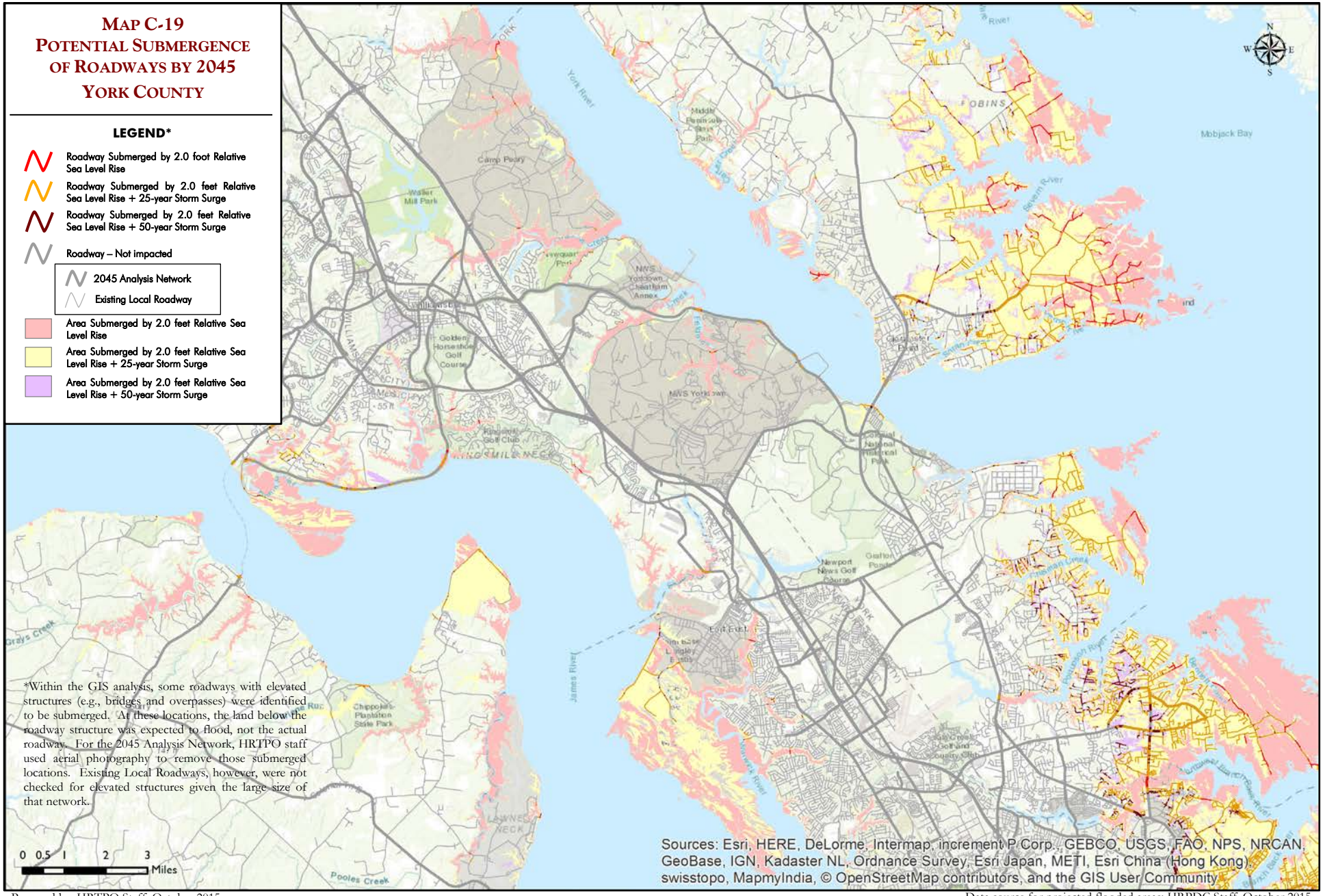

MAP C-15
2012 NET ANNUAL TONNAGE BY TRUCK
YORK COUNTY
LEGEND
0M – 0.5M
0.5M – 1M
1M – 3M
3M – 5M
5M – 15M
15M – 30M
30M – 45M
45M – 60M
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
USCG TRAINING CENTER YORKTOWN
YORK RIVER
JAMES RIVER
COLONIAL PKWY
23.062
0.155
0.573
0.924
23.987
0.352
0.409
1.355
1.605
0.053
1.472
1.045
0.712
60
199
64
31
17
238
0 0.75 1.5 3 Miles


MAP C-16
2040 NET ANNUAL TONNAGE BY TRUCK
YORK COUNTY
LEGEND
0M – 0.5M
0.5M – 1M
1M – 3M
3M – 5M
5M – 15M
15M – 30M
30M – 45M
45M – 60M
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
USCG TRAINING CENTER YORKTOWN
YORK RIVER
JAMES RIVER
COLONIAL PKWY
44.917
0.882
2.625
1.132
0.995
2.415
47.332
3.196
0.275
2.873
45.795
2.065
42.575
60
199
64
17
31
238
0 0.75 1.5 3 Miles


MAP C-17
2012 NET ANNUAL DOLLARS BY TRUCK
YORK COUNTY
LEGEND
$0B – $0.5B
$0.5B – $1B
$1B – $5B
$5B – $15B
$15B – $50B
$50B – $90B
$90B – $130B
$130B – $170B
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
$46.164
$0.159
$0.145
$0.319
$0.433
$46.742
$0.023
$45.922
$1.164
$1.508
$1.659
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
USCG TRAINING CENTER YORKTOWN
YORK RIVER
JAMES RIVER
COLONIAL PKWY
60
199
64
31
17
238
0 0.75 1.5 3 Miles


MAP C-18
2040 NET ANNUAL DOLLARS BY TRUCK
YORK COUNTY
LEGEND
$0B – $0.5B
$0.5B – $1B
$1B – $5B
$5B – $15B
$15B – $50B
$50B – $90B
$90B – $130B
$130B – $170B
Data source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.
$160.436
$0.231
$0.264
$0.613
$0.899
$1.162
$161.599
$2.861
$3.120
$0.114
$160.417
$2.478
$158.029
$2.462
CAMP PEARY
NAVAL SUPPLY CENTER CHEATHAM ANNEX
NAVAL WEAPONS STATION YORKTOWN
JBLE - FORT EUSTIS
JBLE - LANGLEY AFB
USCG TRAINING CENTER YORKTOWN
YORK RIVER
JAMES RIVER
COLONIAL PKWY
60
199
64
17
238
31
0 0.75 1.5 3 Miles

Map C-19
Potential Submergence of Roadways by 2045
York County



Prepared by: HRTPO Staff, October 2015

Data source for projected flooded areas: HRPDC Staff, October 2015

Bridge Data by Jurisdiction

James City County

Federal Bridge #	Route	Facility	Crossing	Year Built	Year Recnst	SD/FO	Federal PM Bridge Condition	Posted Weight Limit (tons)
10518	601	Barnes Road	I-64	1971	-	-	Fair	-
4290026P		Colonial Parkway	Back River	1956	-	-	Fair	-
4290023P		Colonial Parkway	College Creek	1956	-	-	Fair	-
4290022P		Colonial Parkway	Halfway Creek	1942	-	-	Fair	-
4290024P		Colonial Parkway	Mill Creek	1956	-	-	Fair	-
4290025P		Colonial Parkway	Powhatan Creek	1956	-	-	Fair	-
10523	607	Croaker Road	CSX R/R	1979	-	-	Fair	-
10472	30	Croaker Road NB	I-64	1979	-	-	Fair	-
10474	30	Croaker Road SB	I-64	1979	-	-	Fair	-
24057	31	Glass House Ferry	James River	1994	1995	FO	Fair	-/16/28
10533	629	Hickory Signpost Road	Mill Creek	1932	1997	FO	Good	18/-/-
10516	601	Hicks Island Road	Diascund Creek	1932	1974	FO	Fair	15/-/-
10494	64	I-64 EB	France Swamp	1975	-	-	Fair	-
10495	64	I-64 WB	France Swamp	1975	-	-	Fair	-
10489	64	I-64 EB	Naval Weapons Station Access	1965	1982	-	Fair	-
10491	64	I-64 WB	Naval Weapons Station Access	1965	1982	-	Fair	-
10496	64	I-64 EB	Six Mt Zion Road	1975	-	-	Fair	-
10498	64	I-64 WB	Six Mt Zion Road	1975	-	FO	Fair	-
10493	64	I-64	Skiffes Creek	1965	-	-	Fair	-
10488	64	I-64	Tributary Old Mill Pond	1932	1979	-	Fair	-
4290029P		Jamestown Island Tour Road	Creek	1957	-	FO	Fair	-
4290030P		Jamestown Island Tour Road	Creek	1957	-	FO	Fair	-
4290031P		Jamestown Island Tour Road	Kingsmill Creek	1957	-	FO	Fair	-
4290028P		Jamestown Island Tour Road	Pitch And Tar Swamp	1957	-	FO	Good	-
26215	31	Jamestown Road	Lake Powell	1999	-	-	Good	-
10476	31	Jamestown Road	Powhatan Creek	1957	-	FO	Fair	-
28011	5	John Tyler Hwy	Chickahominy River	2009	-	-	Good	-
10464	5	John Tyler Hwy	Powhatan Creek	1937	1978	FO	Fair	-
10534	633	Jolly Pond Road	Jolly Pond Spillway	1982	-	-	Fair	-
25978	612	Longhill Road	Chisel Run	1999	-	-	Fair	-
25207	612	Longhill Road	Route 199	1999	-	-	Fair	-
25054	1221	Mill Pond Run	Mill Swamp	1997	-	-	Fair	-
26142	321	Monticello Avenue	Powhatan Creek	2001	-	-	Fair	-
26141	321	Monticello Avenue	Shellbank Creek	2001	-	-	Good	-
10524	608	Mount Laurel Road	France Swamp	1975	-	-	Fair	-
10536	646	Newman Road	Skimino Creek	1976	-	-	Good	-
10530	613	News Road	Powhatan Swamp Tributary	1974	-	-	Fair	-
25206	658	Olde Towne Road	Route 199	1999	-	-	Fair	-
10468	30	Route 30 NB	I-64	1971	-	-	Fair	-
10470	30	Route 30 SB	I-64	1971	-	-	Fair	-

Data source: HRTPO analysis of VDOT data. Data as of January 2019. SD/FO indicates if a bridge is classified as structurally deficient or functionally obsolete.

Federal Performance Measure (PM) Bridge Condition includes each bridge's condition, based on the new Federal Performance Measure standards. Bridges can be rated as Good, Fair, or Poor.

Posted Weight Limit is shown as X/Y/Z, with the (X) representing the posted weight limit for all vehicles, the (Y) representing the posted weight limit for single unit trucks, and the (Z) representing the posted weight limit for trucks with semi-trailers. The Posted Weight Limit is shown in tons.

JAMES CITY COUNTY (CONTINUED)

Federal Bridge #	Route	Facility	Crossing	Year Built	Year Recnst	SD/FO	Federal PM Bridge Condition	Posted Weight Limit (tons)
10486	60	Route 60 EB	CSX R/R	1964	-	FO	Fair	-
10487	60	Route 60 WB	CSX R/R	1968	-	FO	Fair	-
12656	60	Route 60 EB	Diascund Creek	1947	1994	-	Fair	-
12655	60	Route 60 WB	Diascund Creek	1978	-	-	Good	-
25198	199	Route 199	Branch	1999	-	-	Fair	-
25202	199	Route 199	Branch	1999	-	-	Fair	-
25209	199	Route 199	Branch	1999	-	-	Fair	-
27254	199	Route 199 EB	College Creek	2004	-	-	Fair	-
10510	199	Route 199 WB	College Creek	1976	-	-	Fair	-
24108	199	Route 199 EB	Colonial Pkwy	1976	-	-	Fair	-
10508	199	Route 199 WB	Colonial Pkwy	1976	-	FO	Fair	-
25210	199	Route 199	Long Hill Swamp	1999	-	-	Fair	-
25512	199	Route 199 NB	Monticello Avenue	1999	-	-	Good	-
25513	199	Route 199 SB	Monticello Avenue	1999	-	FO	Good	-
25201	199	Route 199	Over Branch	1999	-	-	Good	-
24224	199	Route 199 NB	Routes 60 & 603 & CSX R/R	1995	-	-	Fair	-
24228	199	Route 199 SB	Routes 60 & 603 & CSX R/R	1995	-	FO	Fair	-
25208	199	Route 199	Stream	1999	-	-	Good	-
10511	199	Route 199 EB	Tour Road	1976	-	FO	Good	-
10513	199	Route 199 WB	Tour Road	1976	-	FO	Good	-
10531	622	Stewarts Road	Branch Of Diascund Creek	1937	1997	FO	Fair	-
10532	622	Stewarts Road	Diascund Creek	1937	1997	FO	Fair	-

WILLIAMSBURG

Federal Bridge #	Route	Facility	Crossing	Year Built	Year Recnst	SD/FO	Federal PM Bridge Condition	Posted Weight Limit (tons)
22335	60	Bypass Road	CSX R/R	1934	1981	-	Good	-
22328		Capitol Landing Road	CSX R/R	1977	-	FO	Good	-
4290040P		Colonial Parkway	Papermill Creek	2007	-	-	Fair	-
22337	132	Henry Street South	Papermill Creek	1976	-	-	Good	-
4290019P		Lafayette Street	Colonial Parkway	1936	-	FO	Fair	-
22338	143	Merrimac Trail	Colonial Parkway	1948	-	FO	Good	-
22342		Monticello Avenue	Stream	1963	-	-	Fair	-
4290020P		Newport Avenue	Colonial Parkway	1957	-	FO	Fair	-
4290018P	60	Page Street	Colonial Parkway	1936	-	FO	Fair	-
22336	60	Page Street	CSX R/R	1935	1967	-	Good	-
4290016P		Parkway Drive	Colonial Parkway	1972	-	-	Good	-
23768		Quarterpath Road	Tutters Neck Pond	1993	-	FO	Good	-

Data source: HRTPO analysis of VDOT data. Data as of January 2019. SD/FO indicates if a bridge is classified as structurally deficient or functionally obsolete.

Federal Performance Measure (PM) Bridge Condition includes each bridge's condition, based on the new Federal Performance Measure standards. Bridges can be rated as Good, Fair, or Poor.

Posted Weight Limit is shown as X/Y/Z, with the (X) representing the posted weight limit for all vehicles, the (Y) representing the posted weight limit for single unit trucks, and the (Z) representing the posted weight limit for trucks with semi-trailers. The Posted Weight Limit is shown in tons.

YORK COUNTY

Federal Bridge #	Route	Facility	Crossing	Year Built	Year Recnst	SD/FO	Federal PM Bridge Condition	Posted Weight Limit (tons)
19871	604	Barlow Road	I-64	1979	-	-	Fair	-
19870	600	Big Bethel Road	Big Bethel Reservoir	1931	1986	-	Fair	-
19826	60	Bypass Road	Trib Queens Creek	1968	-	-	Fair	-
19824	17	Coleman Bridge	York River	1952	1996	FO	Fair	-
4290011P		Colonial Parkway	Felgate's Creek	1981	-	-	Fair	-
4290014P		Colonial Parkway	Hubbard's Lane	1964	-	-	Good	-
4290010P		Colonial Parkway	Indian Field Creek	1933	-	-	Fair	-
4290012P		Colonial Parkway	Kings Creek	1933	-	-	Fair	-
4290009P		Colonial Parkway	Naval Weapons Road	1931	-	FO	Fair	-
4290008P		Colonial Parkway	North Pier Access Road	1962	-	FO	Fair	-
4290013P		Colonial Parkway	Penniman Road	1964	-	-	Fair	-
4290006P		Colonial Parkway	Route 17	1956	-	-	Fair	-
4290005P		Colonial Parkway	Yorktown Creek	1955	-	-	Fair	-
19883	716	East Queens Drive	Queens Creek - Spillway	1932	1997	-	Fair	11/-/-
27508	17	George Washington Hwy	Poquoson River	2015	2015	-	Good	-
19820	17	George Washington Hwy NB	Yorktown Battlefield Tour Road	1968	-	FO	Fair	-
19822	17	George Washington Hwy SB	Yorktown Battlefield Tour Road	1968	-	FO	Fair	-
25281	64	Grove Interchange	I-64	2002	-	-	Fair	-
25282	64	Grove Interchange	I-64 Ramp	2002	-	-	Fair	-
25283	64	Grove Interchange	Routes 60 & 143 and CSX R/R	2002	-	-	Fair	-
19838	64	I-64 EB	Colonial Pkwy	1965	-	-	Fair	-
19840	64	I-64 WB	Colonial Pkwy	1965	-	-	Fair	-
19834	64	I-64 EB	Lakes Head Drive	1965	-	-	Fair	-
19836	64	I-64 WB	Lakes Head Drive	1965	-	FO	Fair	-
19828	64	I-64 EB	Penniman Road	1965	1977	-	Fair	-
19830	64	I-64 WB	Penniman Road	1965	1977	-	Fair	-
19842	64	I-64 EB	Queens Creek	1965	-	-	Fair	-
19843	64	I-64 WB	Queens Creek	1965	-	-	Fair	-
19827	64	I-64	Skimino Creek	1956	1979	-	Good	-
19832	64	I-64 EB	WB Ramp to Route 143	1965	1982	-	Fair	-
19856	134	Magruder Blvd EB	Brick Kiln Creek	1973	-	-	Fair	-
19855	134	Magruder Blvd WB	Brick Kiln Creek	1930	-	FO	Fair	-
19853	134	Magruder Blvd	Route 17	1965	-	-	Fair	-
4290007P		Old Williamsburg Road	Colonial Parkway	1956	-	-	Good	-
19851	132	Route 132	Queens Creek	1996	-	-	Fair	-
19857	143	Route 143	I-64	1965	-	FO	Fair	-
19860	143	Route 143	Queens Creek	1941	1944	SD	Poor	-
19866	199	Route 199 EB	I-64	1977	-	-	Fair	-
19868	199	Route 199 WB	I-64	1977	-	-	Fair	-
25213	199	Route 199 NB	Mooretown Road	1999	-	-	Fair	-
25212	199	Route 199 SB	Mooretown Road	1999	-	-	Fair	-
19862	199	Route 199 NB	Routes 60 & 143 & CSX R/R	1977	-	-	Fair	-
19864	199	Route 199 SB	Routes 60 & 143 & CSX R/R	1977	-	-	Fair	-
19877	646	Route 199/Newman Road EB	I-64	1979	-	-	Fair	-
19879	646	Route 199/Newman Road WB	I-64	1979	-	-	Fair	-
19875	631	Waterview Road	Vepco Intake Canal	1955	1974	-	Fair	-
19884	716	West Queens Drive	I-64	1965	-	-	Fair	-
4290002P		Yorktown Battlefield Tour Road	Beaverdam Creek	1975	-	FO	Fair	-
4290003P		Yorktown Battlefield Tour Road	Crawford Road	1956	-	FO	Fair	-
4290004P		Yorktown Battlefield Tour Road	Route 17	1959	-	FO	Fair	-

Data source: HRTPO analysis of VDOT data. Data as of January 2019. SD/FO indicates if a bridge is classified as structurally deficient or functionally obsolete. Federal Performance Measure (PM) Bridge Condition includes each bridge's condition, based on the new Federal Performance Measure standards. Bridges can be rated as Good, Fair, or Poor. Posted Weight Limit is shown as X/Y/Z, with the (X) representing the posted weight limit for all vehicles, the (Y) representing the posted weight limit for single unit trucks, and the (Z) representing the posted weight limit for trucks with semi-trailers. The Posted Weight Limit is shown in tons.

HRTPO Studies

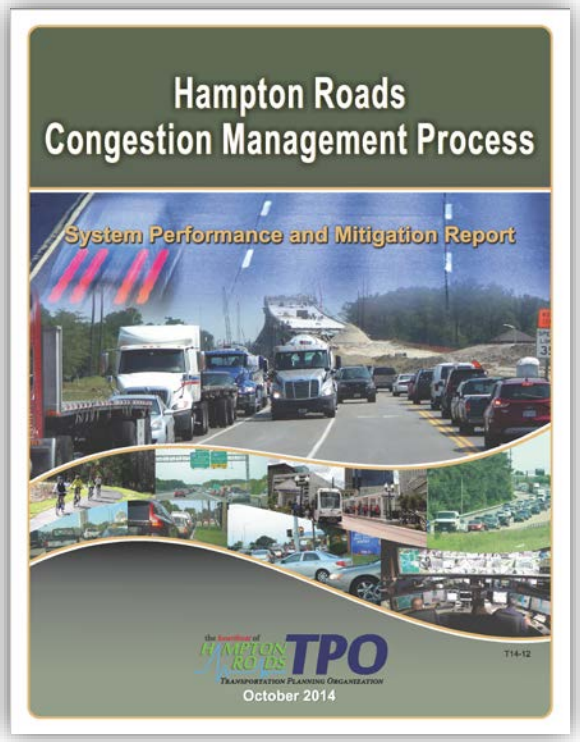
This section provides a summary of recent HRTPO studies that contain planning efforts for Historic Triangle communities. A brief description of each study as well as maps, tables, and findings that are specific to James City County, Williamsburg, and York County are included.

Congestion Management Process – October 2014

As the federally designated Metropolitan Planning Organization (MPO) for the Hampton Roads, Virginia region, HRTPO is required by federal law to maintain a Congestion Management Process (CMP). The Hampton Roads CMP is an on-going systematic process for managing congestion that provides information and analysis on multimodal transportation system performance and on strategies to alleviate congestion and enhance the mobility of persons and goods regionwide. During this process, HRTPO works with state and local agencies to develop these strategies and mobility options. Federal regulations require that a CMP be in place in all Transportation Management Areas (TMAs), which are urban areas over 200,000 in population. The first Congestion Management System for Hampton Roads was released in 1995, and was updated in 1997, 2001, 2005, and 2010.

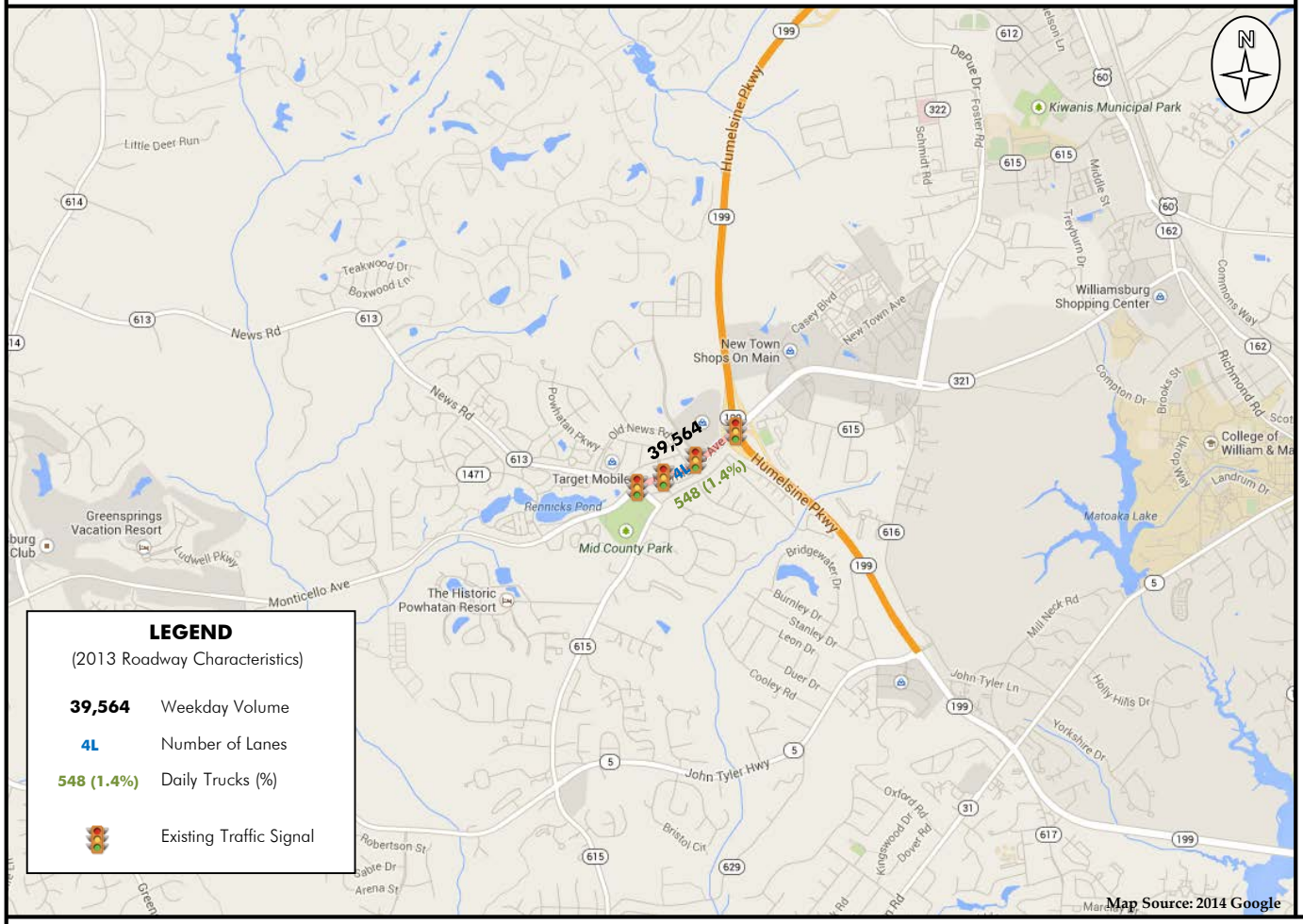
The current ***Hampton Roads Congestion Management Process – System Performance and Mitigation*** report was released in 2014. This report provides a thorough assessment of the roadway system in Hampton Roads, updates the regional LOS congestion analysis (using the 2013 Existing and the 2034 roadway network), ranks the most congested corridors, and provides congestion mitigation strategies and recommended improvements for the congested corridors. Two of the congested corridors – Monticello Avenue from News Road to Route 199 and Route 199 from John Tyler Highway to Jamestown Road – are located in the Historic Triangle.

For the first time in the 2014 update, HRTPO staff has access to historical travel time and speed data for use in the CMP. INRIX collects travel time and speed data on a continuous basis, using millions of GPS-enabled fleet vehicles (Taxis, airport shuttles, service vehicles, and long haul trucks), mobile devices, traditional road sensors, and other sources. INRIX data allows for a number of congestion measures to be reported, including travel speeds, congestion duration, and travel time reliability.



CMP CONGESTED CORRIDOR - ARTERIAL #9

Monticello Ave Between News Rd and Route 199
James City County



LEGEND
(2013 Roadway Characteristics)

39,564	Weekday Volume
4L	Number of Lanes
548 (1.4%)	Daily Trucks (%)
	Existing Traffic Signal

CORRIDOR SUMMARY

Corridor Length	0.57 Miles
Speed Limit	45 mph
Roadway Class	Minor Arterial
Transit Service	WAT Red Line – South Williamsburg
Highest CMP Segment Score	58 – PM Peak (Between News Rd and Route 199)

RECENT PROJECTS

- None

FUTURE PROJECTS

FY 2015 SYIP/TIP Intersection Improvements

- Additional turn lanes and pedestrian improvements at the intersections of Monticello Ave/Old News Rd, Monticello Ave/News Rd, and News Rd/Ironbound Rd (UPC #82961 - Construction expected to begin in 2014)

				Eastbound (2013)														Westbound (2013)												Both Directions			
				SLOWEST SPEED (mph)		HIGHEST TRAVEL TIME INDEX		HIGHEST PICA		HIGHEST PLANNING TIME INDEX		# CONG 15-MIN INTRVLS		TOTAL DELAY (Hrs/Mi)		CONG LEVEL		SLOWEST SPEED (mph)		HIGHEST TRAVEL TIME INDEX		HIGHEST PICA		HIGHEST PLANNING TIME INDEX		# CONG 15-MIN INTRVLS		TOTAL DELAY (Hrs/Mi)		CONG LEVEL		# LANES		2034 PROJ VOL	20-YR PROJ TRUCK DELAY (Hrs/Mi)	2034 PM CONG LEVEL
FACILITY NAME	SEGMENT FROM	SEGMENT TO	Length (Mi)	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	2013	2034			
MONTICELLO AVE	NEWS RD	ROUTE 199	0.57	-	-	-	-	-	-	-	-	-	-	-	-	MOD	SEV	-	-	-	-	-	-	-	-	-	-	-	-	MOD	SEV	4	4	45,000	13.4	SEV

	Congestion Management Strategies	Applicable Strategy?
Strategy #1 Eliminate Person Trips or Reduce VMT	**Growth Management/Activity Centers**	
	1-1 Land Use Policies/Regulations	IN USE
	Congestion/Value Pricing	
	1-2 Road User Fees/High Occupancy Toll (HOT) Lanes	-
	1-3 Parking Fees	-
	Transportation Demand Management (TDM)	
	1-4 Telecommuting	IN USE
	1-5 Employee Flextime Benefits/Compressed Work Week	IN USE
Strategy #2 Shift Trips from Auto to Other Modes	**Public Transit Capital Improvements**	
	2-1 Exclusive Right-of-Way - New Rail Service	-
	2-2 Exclusive Right-of-Way - New Bus Facilities	-
	2-3 Ferry Services	-
	2-4 Fleet Expansion	YES
	2-5 Improved Intermodal Connections	-
	2-6 Improved/Increased Park & Ride Facilities & Capital Improvements	YES
	Public Transit Operational Improvements	
	2-7 Service Expansion	YES
	2-8 Traffic Signal Preemption	YES
	2-9 Improved Transit Performance	YES
	2-10 Transit Fare Reductions Plan/Reduced Rate of Fare	YES
	2-11 Transit Information Systems	YES
	Bicycle and Pedestrian Modes	
	2-12 Improved/Expanded Bicycle Network	IN USE
	2-13 Bicycle Storage Systems	YES
	2-14 Improved/Expanded Pedestrian Network	YES
Strategy #3 Shift Trips from SOV to HOV	**High Occupancy Vehicle (HOV)**	
	3-1 Add HOV Lanes	-
	3-2 HOV Toll Savings	-
	Transportation Demand Management (TDM)	
	3-3 Rideshare Matching Services	IN USE
	3-4 Vanpool/Employer Shuttle Program	IN USE
	3-5 Trip Reduction Program	IN USE
	3-6 Parking Management	IN USE
Strategy #4 Improve Roadway Operations	**Traffic Operational Improvements**	
	4-1 Geometric Improvements	YES
	4-2 Intersection Turn Restrictions	IN USE
	4-3 Intersection Signalization Improvements	YES
	4-4 Coordinated Intersections Signals	YES
	4-5 Roadway Environment	YES
	4-6 Intelligent Transportation Systems/Smart Traffic Centers (ITS)	IN USE
	4-7 Reversible Lanes	YES
	4-8 Freight Policies and Improvements	-
	4-9 Incident Management, Detection, Response & Clearance	YES
	4-10 Construction Management	YES
	4-11 Elimination of Bottlenecks	-
	4-12 Ramp Metering	-
	4-13 Access Control and Connectivity	IN USE
	4-14 Median Control	IN USE
Strategy #5 Add Capacity	**Addition of General Purpose Lanes**	
	5-1 Freeway Lanes	-
	5-2 Arterial lanes	YES
	5-3 Interchanges	-
	5-4 Improve Alternate Routes	YES

CMP CONGESTED CORRIDOR - ARTERIAL #9

Monticello Ave

Between News Rd and Route 199

Observations & Possible Causes of Congestion

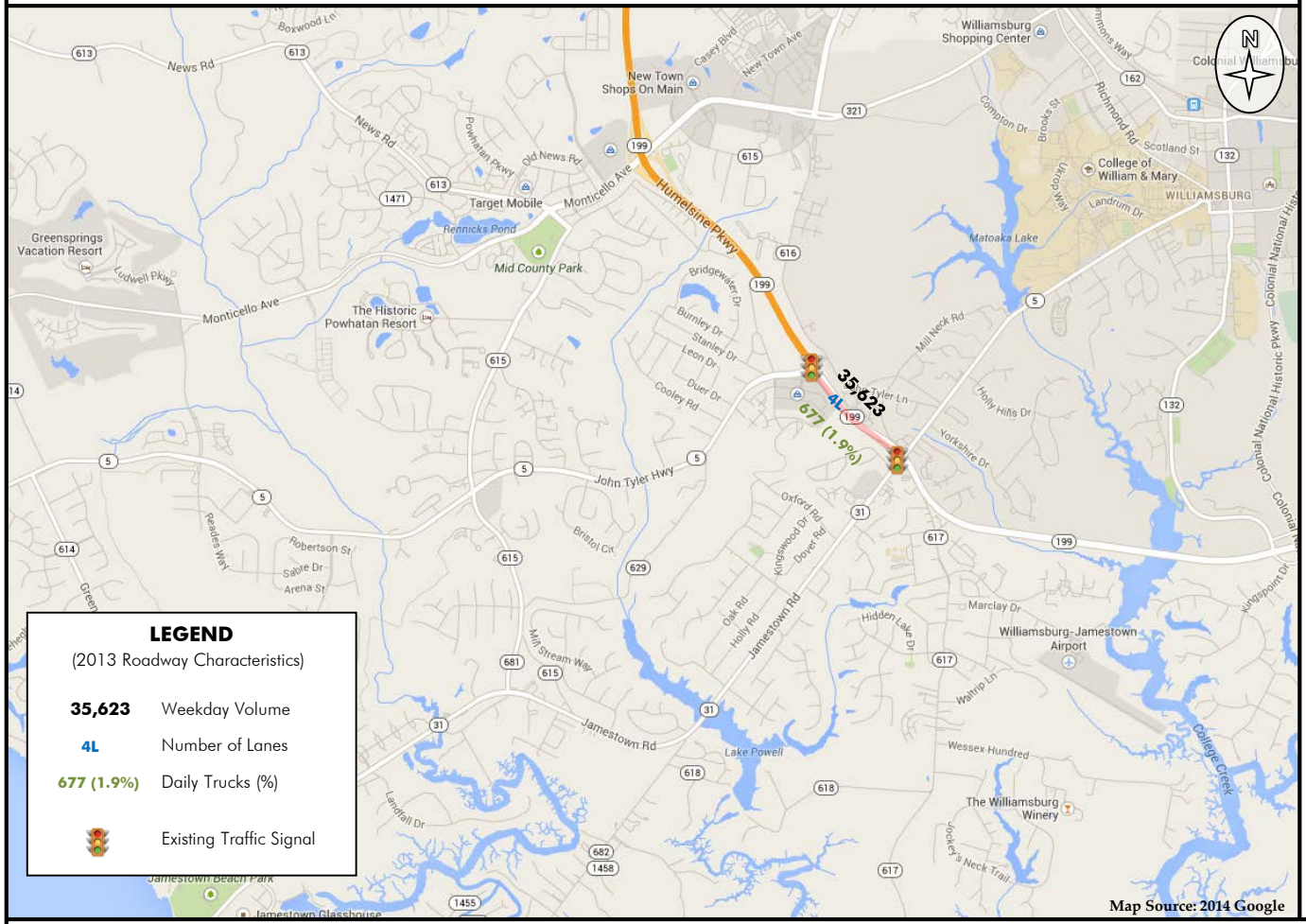
- Heavy commercial development along, and to the east of, the corridor.
- High directional distribution of traffic on Monticello Ave between News Rd and Route 199 during the AM Peak Hour (65% EB) and the PM Peak Hour (59% WB).
- Heavy PM Peak Hour volume in WB direction from Route 199 to News Rd (2,035 vehicles).
- Heavy traffic at the Monticello Ave/News Rd and Monticello Ave/Monticello Marketplace intersections during the PM Peak Period.
- Left-turning vehicles from WB Monticello Ave to SB News Rd back up beyond the turn bay into the through lanes back to the Monticello Marketplace entrance.
- Signals are closely spaced between News Rd and Windsormeade Way.
- Weaving is an issue on WB Monticello Ave between Route 199 and Windsormeade Way.
- No U-turns are allowed along Monticello Ave west of News Rd.
- There are no crosswalks or pedestrian pushbuttons at the intersection of Monticello Ave and News Rd, in spite of sidewalks in the area and the Mid County Park on the southwest corner.

Potential Congestion Mitigation Strategies

- Continue to promote TDM, public transit, and active transportation strategies in order to reduce traffic volume in this corridor. Active transportation strategies and safety in the corridor will be addressed in an upcoming VDOT study.
- Improve the movement between Monticello Ave and Ironbound Rd via News Rd by constructing new turn lanes as included in the programmed project (UPC #82961).
- Evaluate and consider constructing an additional exit lane for Monticello Marketplace at Monticello Ave signalized intersection and redesignate exit lanes to dual left-turns and one through/right-turn lane.
- Ensure coordination of signals in the corridor. This can be done through a Special Use Permit completed with the developer of the Courthouse Commons Shopping Center. This would also be assisted with the future installation of the Insync system, which VDOT anticiapates happening within the next 6 months to a year.
- Continue existing access management strategies in this corridor for future developments.
- Consider improving connections between developments so traffic does not have to use Monticello Ave.

CMP CONGESTED CORRIDOR - ARTERIAL #11

Route 199 Between John Tyler Hwy (Route 5) and Jamestown Rd
James City County and City of Williamsburg



Corridor Summary

Corridor Length	0.47 Miles
Speed Limit	45 mph
Roadway Class	Principal Arterial
Transit Service	WAT Red Line – South Williamsburg
Highest CMP Segment Score	56 – Southeastbound from John Tyler Hwy to Jamestown Rd during the PM Peak

Recent Projects

- Upgraded signal and installed second left-turn lane on Westbound Route 199 at John Tyler Highway (completed in 2013)

Future Projects

- None

FACILITY NAME	SEGMENT FROM	SEGMENT TO	Length (Mi)	Eastbound (2013)														Westbound (2013)														Both Directions				
				SLOWEST SPEED (mph)		HIGHEST TRAVEL TIME INDEX		HIGHEST PICA		HIGHEST PLANNING TIME INDEX		# CONG 15-MIN INTRVLS		TOTAL DELAY (Hrs/Mi)		CONG LEVEL		SLOWEST SPEED (mph)		HIGHEST TRAVEL TIME INDEX		HIGHEST PICA		HIGHEST PLANNING TIME INDEX		# CONG 15-MIN INTRVLS		TOTAL DELAY (Hrs/Mi)		CONG LEVEL		# LANES		2034 PROJ VOL	20-YR PROJ TRUCK DELAY (Hrs/Mi)	2034 PM CONG LEVEL
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	2013	2034			
ROUTE 199	JOHN TYLER HWY (RTE 5)	WILLIAMSBURG CL	0.23	34	27	1.32	1.69	0.18	0.55	1.66	2.75	0	12	15	58	MOD	SEV	33	32	1.32	1.37	0.20	0.24	1.73	1.58	0	0	15	39	MOD	MOD	4	4	49,000	0.8	SEV
ROUTE 199	JAMES CITY CL (WEST)	JAMESTOWN RD	0.24	34	27	1.32	1.69	0.18	0.55	1.66	2.75	0	12	15	58	MOD	SEV	33	32	1.32	1.37	0.20	0.24	1.73	1.58	0	0	15	39	MOD	MOD	4	4	49,000	0.8	SEV

	Congestion Management Strategies	Applicable Strategy?
Strategy #1 Eliminate Person Trips or Reduce VMT	**Growth Management/Activity Centers**	
	1-1 Land Use Policies/Regulations	IN USE
	Congestion/Value Pricing	
	1-2 Road User Fees/High Occupancy Toll (HOT) Lanes	-
	1-3 Parking Fees	-
	Transportation Demand Management (TDM)	
	1-4 Telecommuting	IN USE
	1-5 Employee Flextime Benefits/Compressed Work Week	IN USE
Strategy #2 Shift Trips from Auto to Other Modes	**Public Transit Capital Improvements**	
	2-1 Exclusive Right-of-Way - New Rail Service	-
	2-2 Exclusive Right-of-Way - New Bus Facilities	-
	2-3 Ferry Services	-
	2-4 Fleet Expansion	YES
	2-5 Improved Intermodal Connections	-
	2-6 Improved/Increased Park & Ride Facilities & Capital Improvements	YES
	Public Transit Operational Improvements	
	2-7 Service Expansion	YES
	2-8 Traffic Signal Preemption	YES
	2-9 Improved Transit Performance	YES
	2-10 Transit Fare Reductions Plan/Reduced Rate of Fare	YES
	2-11 Transit Information Systems	YES
	Bicycle and Pedestrian Modes	
	2-12 Improved/Expanded Bicycle Network	YES
	2-13 Bicycle Storage Systems	YES
	2-14 Improved/Expanded Pedestrian Network	YES
Strategy #3 Shift Trips from SOV to HOV	**High Occupancy Vehicle (HOV)**	
	3-1 Add HOV Lanes	-
	3-2 HOV Toll Savings	-
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	3-3 Rideshare Matching Services	IN USE
	3-4 Vanpool/Employer Shuttle Program	IN USE
	3-5 Trip Reduction Program	IN USE
	3-6 Parking Management	IN USE
Strategy #4 Improve Roadway Operations	**Traffic Operational Improvements**	
	4-1 Geometric Improvements	YES
	4-2 Intersection Turn Restrictions	YES
	4-3 Intersection Signalization Improvements	YES
	4-4 Coordinated Intersections Signals	YES
	4-5 Roadway Environment	YES
	4-6 Intelligent Transportation Systems/Smart Traffic Centers (ITS)	IN USE
	4-7 Reversible Lanes	-
	4-8 Freight Policies and Improvements	-
	4-9 Incident Management, Detection, Response & Clearance	YES
	4-10 Construction Management	YES
	4-11 Elimination of Bottlenecks	YES
	4-12 Ramp Metering	-
	4-13 Access Control and Connectivity	IN USE
	4-14 Median Control	IN USE
Strategy #5 Add Capacity	**Addition of General Purpose Lanes**	
	5-1 Freeway Lanes	-
	5-2 Arterial lanes	YES
	5-3 Interchanges	-
	5-4 Improve Alternate Routes	YES

CMP CONGESTED CORRIDOR - ARTERIAL #11

Route 199

Between John Tyler Hwy (Route 5) and Jamestown Rd

Observations & Possible Causes of congestion

- Heavy PM Peak Hour volume (1,804 vehicles in EB peak direction from John Tyler Hwy to Jamestown Rd).
- Heavy traffic congestion at the Jamestown Rd intersection during the PM Peak Period.
  - o High number of through vehicles for EB Route 199 approach at Jamestown Rd. This traffic often backs up beyond the turn bays.
  - o High number of vehicles turning left from WB Route 199 to SB Jamestown Rd. Left-turn demand is higher than the allocated green time.
  - o Heavy through volumes for the SB Jamestown Rd approach at Route 199. There is only one receiving lane for SB Jamestown Rd south of the Route 199 intersection.
- This corridor was retimed and put into time based coordination approximately 1 year ago. It was previously running in a free mode of timing which helped cause extensive backups on Route 199 at Jamestown Rd.

Potential Congestion Mitigation Strategies

- Continue to promote TDM, public transit, and active transportation strategies in order to reduce traffic volume in this corridor.
- Evaluate and consider adding dual left turn lanes for the EB and WB Route 199 approaches at the Jamestown Rd intersection. This would require adding a 2nd receiving lane for SB Jamestown Rd south of the Route 199 intersection, either through new construction or changing the existing NB lane uses and restriping the pavement.
- Consider extending the turn bays on EB Route 199 beyond the typical peak period length of the queue.
- Evaluate and consider adding 2nd through lane for SB Jamestown Rd approach at the Route 199 intersection. This would also require adding a 2nd receiving lane for SB Jamestown Rd south of the Route 199 intersection.

MILITARY TRANSPORTATION NEEDS

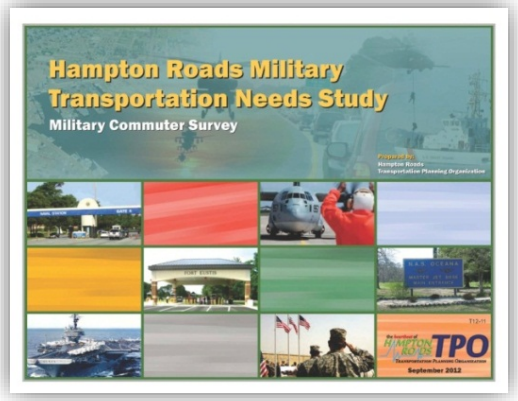
Hampton Roads is home to many U.S. military and supporting sites that are important to the defense and security of our nation. As a result of the area's large military presence, much of the local economy is driven by the U.S. Department of Defense (DoD). Defense readiness and efficient military operations require a sufficient transportation network so that cargo and personnel can be moved as quickly and safely as possible.

PHASE I: HIGHWAY NETWORK ANALYSIS – SEPTEMBER 2011

Phase I of the Hampton Roads Military Transportation Needs Study was completed and approved by the HRTPO Board in September 2011. In this first phase, HRTPO staff worked with various stakeholders – local military representatives, state and federal agencies, port officials and local jurisdictions – to determine transportation concerns and needs of the local military. HRTPO staff identified a roadway network that includes both the Strategic Highway Network (STRAHNET) and additional roadways that serve the military sites and intermodal facilities not included in the STRAHNET. STRAHNET (developed by the U.S. Department of Defense (DoD)) serves as the minimum national defense public highway network needed to support a defense emergency and day-to-day military cargo movement. Staff analyzed this "Roadways Serving the Military" network to determine deficient locations, such as congested segments, deficient bridges, and inadequate geometrics. The study made numerous recommendations to address existing deficiencies and to accommodate future military travel needs, including revisions to STRAHNET designations, increasing vertical clearance of bridges and tunnels, expanding the width of highway lanes to accommodate military vehicles, rehabilitating or replacing structurally deficient bridges, extending light rail transit to Naval Station Norfolk and creating high-speed passenger rail service to Washington, D.C.

PHASE II: MILITARY COMMUTER SURVEY – SEPTEMBER 2012

HRTPO staff continued this study with the creation of the first region-wide Military Commuter Survey, which was conducted from November 8, 2011 to February 24, 2012. Via the survey, the HRTPO collected information about the commuting experience of military personnel (active-duty, civilians, contractors, reservists and others) travelling to/from the region's military bases, receiving a total of 10,994 survey responses. Four percent (453) of all survey responses were from residents that reside in the Historic Triangle. The survey was developed by HRTPO staff in concert with the commands of the region's military installations and other various transportation stakeholders. The purpose of the survey was to determine the transportation challenges facing local military personnel during their daily commutes in Hampton Roads.



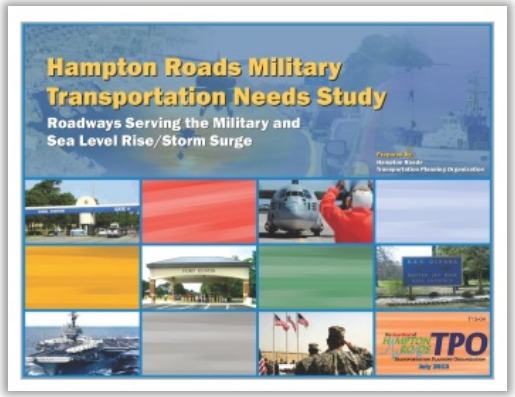
The survey was developed using Google documents and hosted on the HRTPO website. Even though survey responses were sought from all military commuters in the region, military commuters were

specifically targeted who travel to/from 29 of the 38 military and supporting sites identified in Phase I of the study. These 29 military sites—which include Camp Peary, Naval Supply Center Cheatham Annex, Naval Weapons Station Yorktown, U.S. Coast Guard Training Center Yorktown, and Yorktown Fuel Depot in the Historic Triangle—are the primary locations for military-related employment. The remaining 9 locations are supporting sites, such as port terminals and airports, which move military personnel and goods in the event of a national or local emergency. One benefit of hosting the survey on the HRTPO website was that thousands of military personnel who reside within Hampton Roads were introduced to the HRTPO, some learning about its metropolitan planning process and activities for the first time.

Respondents were asked to identify items such as length of morning and afternoon commutes, mode of transportation, transportation problems, and any locations of recurring trouble along their commute. The top reported transportation problems by military commuters were traffic congestion (79%), traffic backups at military gates (67%), and poor roadway maintenance (42%). At the end of the survey, respondents were asked to submit any suggestions they had regarding transportation in the region. Not only was excellent feedback provided, but many expressed thanks for having the opportunity to communicate their transportation challenges.

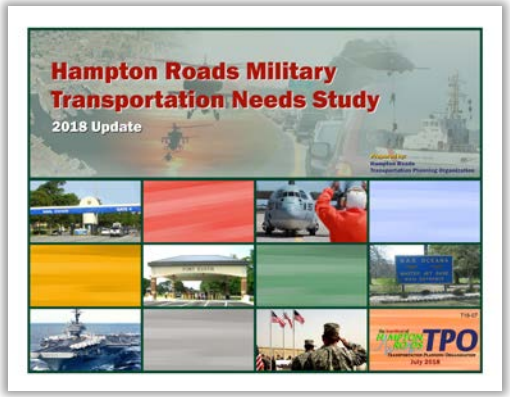
Phase III: Roadways Serving the Military and Sea Level Rise/Storm Surge – July 2013

The Hampton Roads region contains one of the largest natural harbors in the world, making the region an attractive location for military facilities. This coastal location also makes many of these military facilities susceptible to projected relative sea level rise and storm surge, impacting overall defense readiness. The threat of flooding is a concern for the military in the region since military operations require a transportation network that moves cargo and personnel quickly and safely. In response to these concerns, HRTPO staff completed the third phase of the Hampton Roads Military Transportation Needs Study – Roadways Serving the Military and Sea Level Rise/Storm Surge in July 2013.



The impacts of relative sea level rise and storm surge have been recognized along the southeast coast for many years, particularly for low-lying communities such as Hampton Roads. National, state, regional, and local organizations have participated (or are currently participating) in initiatives that address this pressing issue in order to raise awareness and develop potential solutions. Phase III builds on previous studies and related work to estimate the relative sea level rise and potential storm surge threats to the "Roadways Serving the Military" network established in phase one of the Hampton Roads Military Transportation Needs Study. In Phase I, HRTPO staff reviewed the "Roadways Serving the Military" to determine deficient locations, such as congested segments, deficient bridges, and inadequate geometrics. This third phase of the study continued the work in Phase I by determining flooding-based deficient locations along the roadway network. It expanded upon the work and methodologies developed by the Hampton Roads Planning District Commission (HRPDC) and the Virginia Institute of Marine Science (VIMS) by identifying military roadway segments vulnerable to submergence. Additionally, submergence of other local roadways that provide access to and from the "Roadways Serving the Military", which may be vulnerable to flooding, were also identified.

2018 UPDATE



The 2018 update to the Hampton Roads Military Transportation Needs Study provides an update to Phase I (Highway Network Analysis, September 2011) and III (Roadways Serving the Military and Sea Level Rise/Storm Surge, July 2013) using the most recent data and analysis. Based on stakeholder input, HRTPO staff identified a roadway network that includes both the Strategic Highway Network (STRAHNET) and additional roadways that serve the military sites and intermodal facilities not included in the STRAHNET. Staff reviewed this "Roadways Serving the Military in Hampton Roads" network to determine deficient locations, such as congested segments, deficient bridges, low bridge and tunnel vertical clearances, lane widths below military preferences, and segments vulnerable to flooding. Recommendations have been developed for these deficient locations throughout this report.

"STRAHNET Sites" identified within the study that are located in the Historic Triangle are:

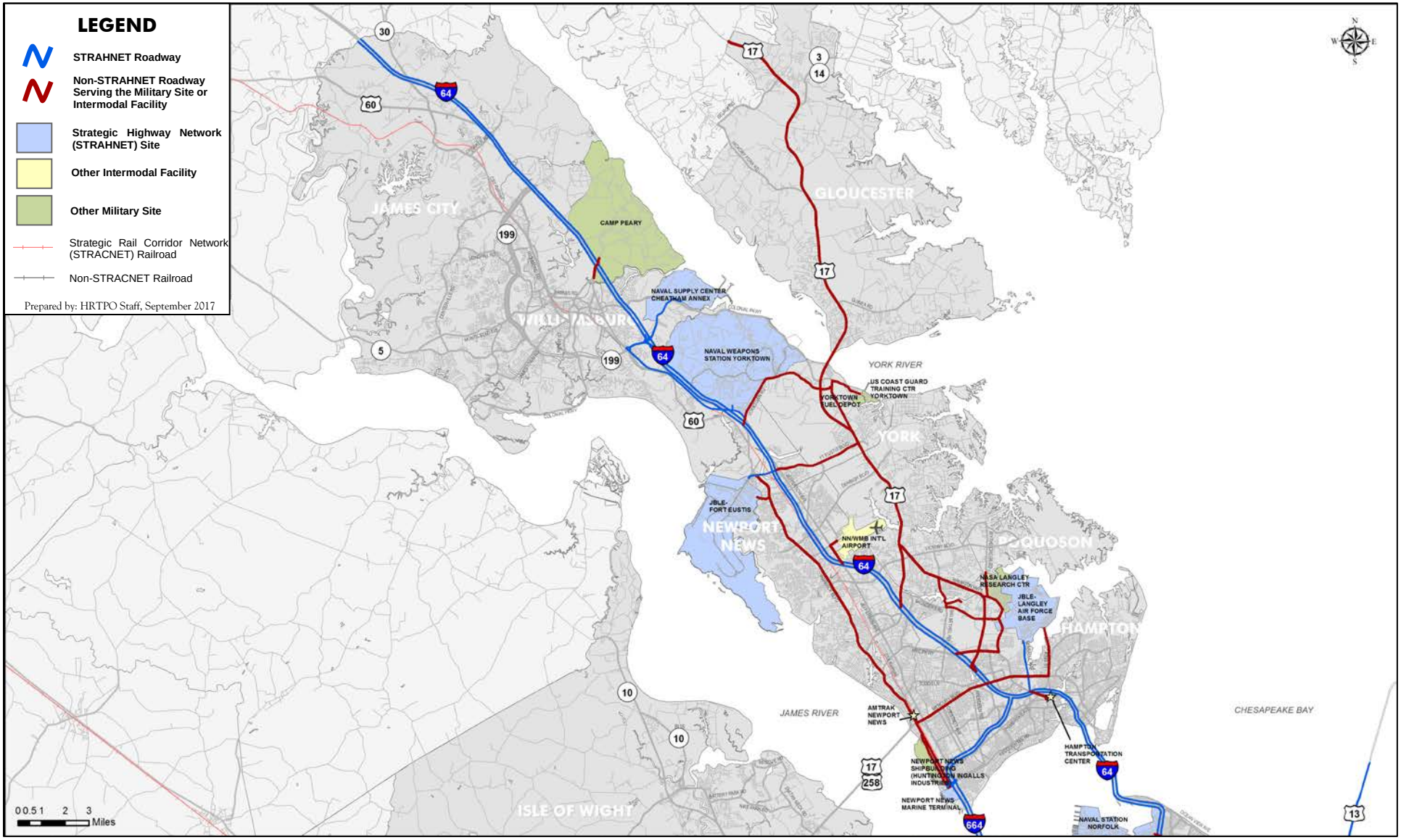
- Naval Supply Center Cheatham Annex (York County)
- Naval Weapons Station Yorktown (York County/Newport News)

"Other Military Sites" identified within the study that are located in the Historic Triangle are:

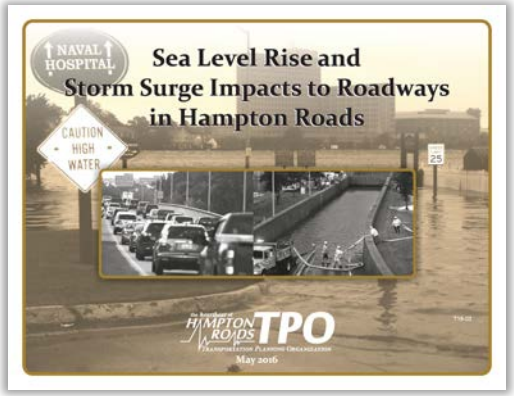
- Camp Peary (York County)
- U.S. Coast Guard Training Center Yorktown (York County)
- Yorktown Fuel Depot (York County)

More information on the Hampton Roads Military Transportation Needs Study is available at http://hrtpo.org/page/military-transportation-needs.

Roadways Serving the Military – Hampton Roads Peninsula



Sea Level Rise and Storm Surge Impacts to Roadways in Hampton Roads – May 2016



The Hampton Roads region contains one of the largest natural harbors in the world, making the region an attractive location for ports, military, tourism, and other businesses. This coastal location also makes many of these regional assets susceptible to projected relative sea level rise (the combined effects of land subsidence and absolute sea level rise) and potential storm surge threats.

Repetitive flooding on roadways and at critical transportation facilities can severely impact travel and hurt regional and local economies. When streets are impassable during and after flooding events, it often results in damages to personal property and missed work time, which has a crippling effect on communities. For this reason, it is imperative for Hampton Roads to plan for climate change impacts to transportation infrastructure and to develop adaptation strategies for those facilities. It is also important to consider the latest projections in sea level rise and storm surge when the region builds new roadway infrastructure or rebuilds existing roadway infrastructure.

In this study, HRTPO staff partnered with HRPDC staff to conduct a comprehensive GIS-based flooding vulnerability analysis for potential sea level rise and storm surge impacts to regional roadways by 2045 (next Long-Range Transportation Plan horizon year). This analysis was used in the Resiliency and Sea Level Rise section of this report. Click Here to view a copy of the final report.

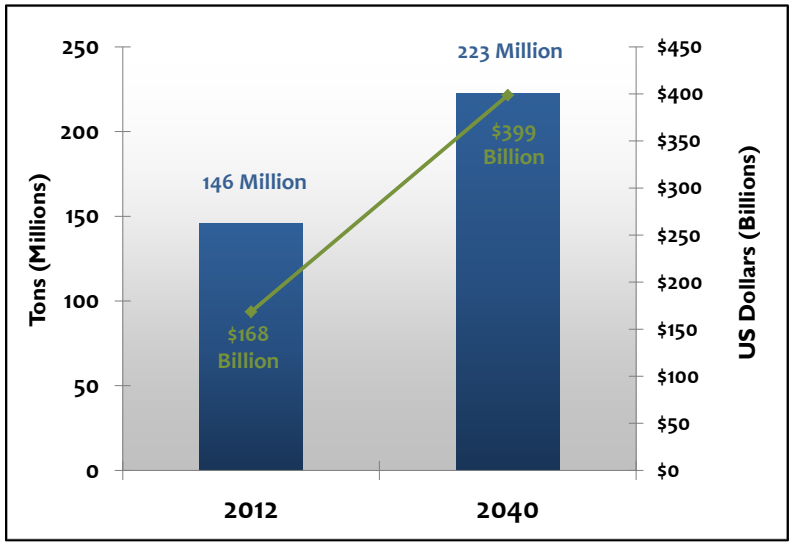
Hampton Roads Regional Freight Study: 2017 Update

Freight transportation influences every aspect of our daily lives and keeps our businesses and industries competitive in the local and global economy. While Hampton Roads and the Commonwealth of Virginia have established an integrated multimodal freight system that facilitates the efficient, reliable, and safe movement of freight, our challenge will be to maintain and expand the system to meet the needs of tomorrow.

Over the last couple of decades, the Hampton Roads Transportation Planning Organization (HRTPO) has engaged in numerous important freight planning activities. This includes the development of the Hampton Roads Regional Freight Study, which serves as a comprehensive resource document on the Hampton Roads multimodal transportation system. This 2017 update builds on previous efforts and is intended to inform freight policy, program, and investment decisions in the Hampton Roads region, which will impact the greater Commonwealth of Virginia. This report details the movement of goods across all freight facilities—highways, ports, railways, and airports. Special emphasis is placed on freight moving by trucks across highways as they serve as the predominant mover of freight.

This report contains an extensive analysis of freight movement to, from, and within Hampton Roads. Some of key findings in this update of the Hampton Roads Regional Freight Study are provided below:

- The total tonnage moved by truck in Hampton Roads is expected to double from 75 to 148 million tons between 2012 and 2040. For this reason, it is imperative for the region to improve the highways most used by the trucking industry in future years.
- The Port of Virginia's channels (50 feet) are among the deepest on the East Coast, and the only port authorized to be deepened to 55 feet. Virginia's deep channels have historically attracted first-in/last out services that require deeper sailing drafts when fully loaded.
- The newest generation of containerships are larger and more efficient than previous ships. In 2016, the ship lines formed into three major carrier alliances that control nearly 90% of the Asia-North America trade. The alliances have vessel-sharing agreements that allow slot-sharing on these large mega-ships which helps avoid financial losses accrued by operating less-than-full ships.
- Larger containerships will lead to new challenges for port facilities and the surrounding areas. Large influxes of containers will create more peaks and valleys that will need to be managed to ease road/rail congestion, workload operations, and driver needs.
- In May 2017, the first 13,000 TEU vessel (COSCO Development) called in Hampton Roads, representing the beginning of a new era for Virginia and the East Coast. With the completion of the Panama Canal expansion in 2016

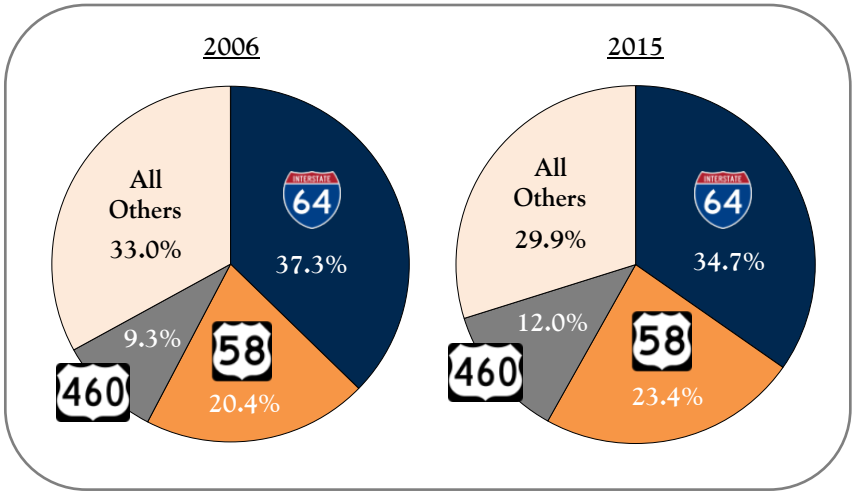


Hampton Roads Total Freight Movement (within USA, Canada, and Mexico)

and other East Coast projects to raise navigational clearances in 2017, additional larger vessels will call Virginia's ports. The net effect is fewer vessel calls, but with larger amounts of containers that are discharged and loaded with each ship call resulting in surges that must be rapidly transferred from the ship/marine terminal and transported over road/rail connections. In the past, ships that have called Hampton Roads have unloaded or loaded between 1,000 and 1,500 containers. With these larger vessels, approximately 4,000 containers will be transferred during their stay at the Port.

COSCO Development (13,000 TEU vessel)

- The share of containerized cargo handled by the Port of Virginia has shifted towards rail. In 2006, 24% of all containers handled by the Port of Virginia were transported by rail. By 2016 this percentage had increased to 37% (over 551,000 rail containers). Port officials expect the amount of freight handled by rail to continue to increase. According to the Master Rail Plan, the Port of Virginia projects that it will transport nearly 1,000,000 containers by rail by the year 2040 (45% share), more than double what was handled by the Port in 2015.
- The region's bridges and tunnels are a significant source of traffic congestion for the movement of freight and people. Limited capacity at the major water crossings contribute to poor regional connectivity causing severe congestion and poor travel reliability. The existing water crossing highway network is fragile, such that minor incidents can cause major traffic delays due to limited alternatives. Decreasing performance combined with increasing volume of people and goods indicates the need for increased capacity and improved reliability across the harbor.
- The primary gateway for trucks entering or exiting Hampton Roads is I-64 (6,100 trucks each weekday in 2015). The next most traveled corridors for trucks entering and exiting the region are Route 58 (4,100 trucks) and Route 460 (2,100 trucks).
- Combined, I-64, Route 58, and Route 460 accounted for 70% of all trucks passing through the region's major gateways in 2015, with the share of trucks shifting to Routes 58 and 460.



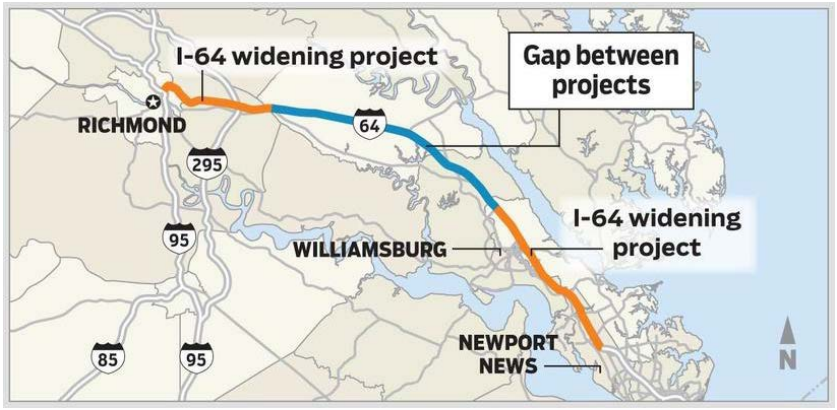
Share of Trucks Passing through Regional Gateways each Weekday, 2006 and 2015

Many of the corridors identified as freight bottlenecks in this study have projects that are currently underway or programmed in the next few years. In 2016, a new tube opened at the Midtown Tunnel and widening of a section of Route 17 in York County was completed. Construction has also started on phases of I-64 on the Peninsula and the I-64/I-264 Interchange. By 2025, widenings of the Hampton Roads Bridge-Tunnel, I-64 on the Peninsula, I-64 in Chesapeake, and Holland Road in Suffolk should be completed.

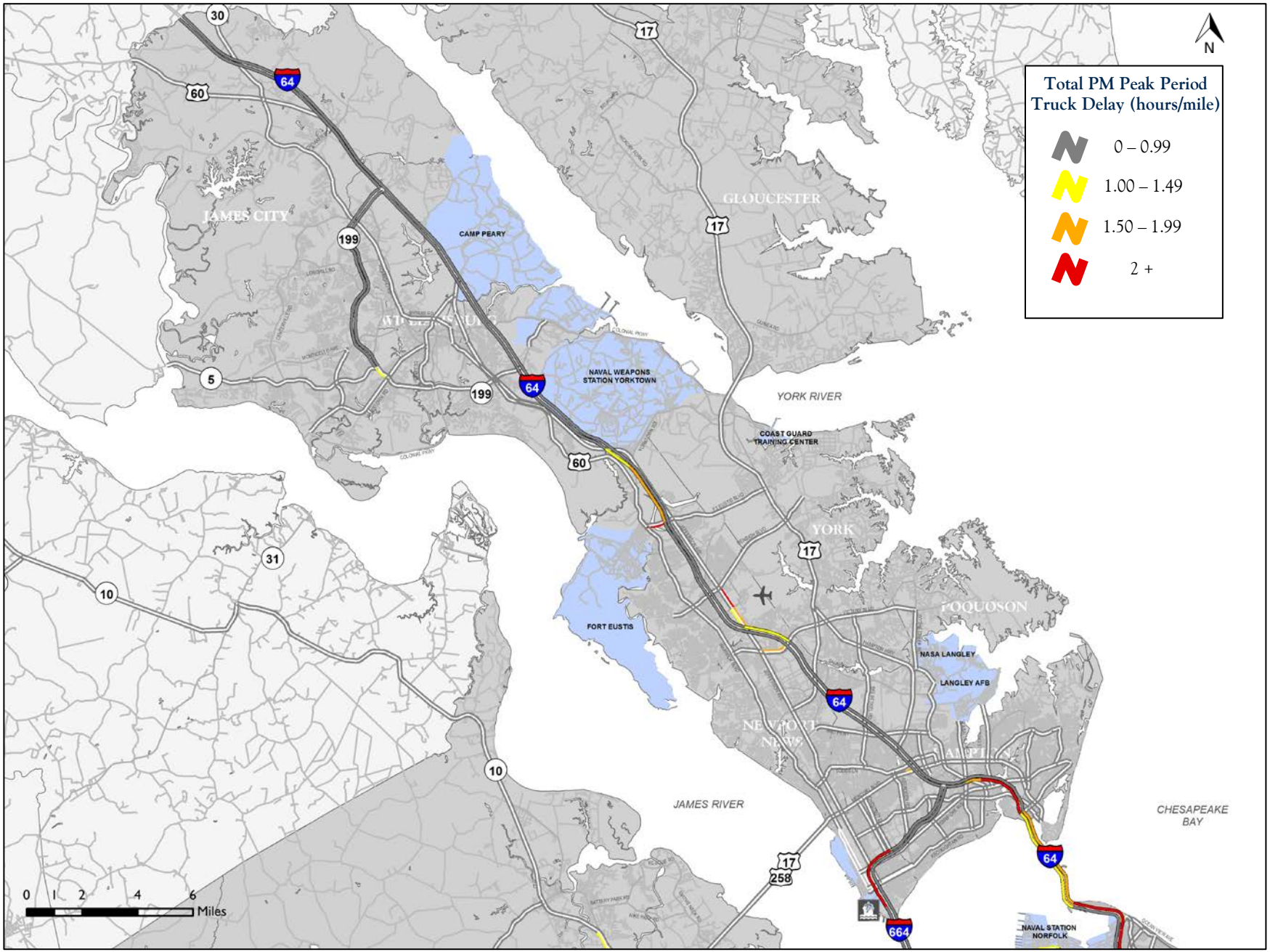
Freight bottlenecks during the PM peak period (total truck delay) for locations in the Historic Triangle are shown on the map on the following page.

Despite these projects that will address freight deficiencies, no funds have been identified for two highway corridors that serve as key Hampton Roads gateways: 1) I-64 for 29 miles between Hampton Roads and Richmond and 2) a limited-access route connecting Hampton Roads and I-95 along Route 58 or the potential I-87 Interstate corridor.

I-64 widening projects near Richmond and in Hampton Roads are underway and fully funded. Construction will commence soon to widen a six-mile stretch of I-64 from 4 to 6 lanes between the I-295 interchange east of Richmond (Exit 200) and the Bottoms Bridge/Quinton interchange (Exit 205), with an estimated completion date of Fall 2019. Construction is also underway to widen 21 miles of I-64 from 4 to 6 lanes in three phases from Bland Boulevard (near Exit 255) to approximately one mile west of Route 199/Newman Road (Exit 234), with an estimated completion date of Winter 2021. No funding, however, has been identified to widen the 29-mile gap between mileposts 205 and 234, 10 miles of which are located outside of the Richmond and Hampton Roads Metropolitan Planning Areas.



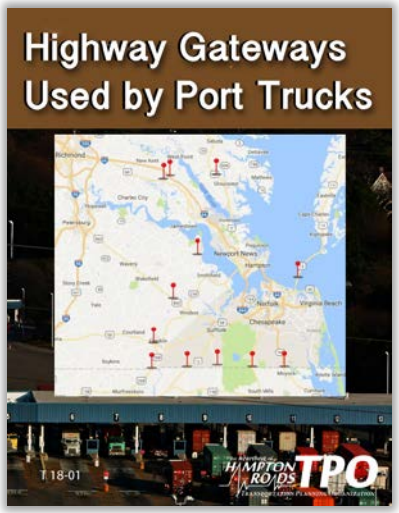
29-Mile Gap between I-64 Widening Projects
Source: Daily Press.



Total Truck Delay, Weekday PM Peak Period, 2014 - Peninsula

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

Highway Gateways Used by Port Trucks – February 2018



HRTPO staff prepared this study to inform the HRTPO Board which highway routes port-related trucks primarily use to enter and exit Hampton Roads. HRTPO staff plans to use the study results to inform the scoring of candidate projects under the HRPTO Project Prioritization Tool, and to provide the study results as input for major regional studies currently being conducted by HRTPO and VDOT. The purpose of this study is to find which highway gateways to Hampton Roads are most used by trucks going to/from the local Port of Virginia port facilities.

Click Here to view a copy of the final report.

Highway Gateways Used by Port Trucks

The HRTPO's Highway Gateways Used by Port Trucks Study shows which highway routes are primarily used by port-related trucks. For this analysis, HRTPO staff analyzed StreetLight origin-destination data, which utilizes location-based services data and GPS-based fleet management data for truck travel. StreetLight was used to determine the highways used by trucks from Port-Related Distribution Centers.

Figure B-1 shows the average weekday share of trucks passing through regional highway gateways from Port-Related Distribution Centers in Hampton Roads. This analysis shows that I-64 on the Peninsula is the primary gateway (57%) followed by US Route 460 (18%) and US Route 58 (16%).

Figure B-2 shows the average weekday share of trucks passing through regional highway gateways from Port-Related Distribution Centers on the Peninsula. This analysis shows that I-64 on the Peninsula (93%) is the primary gateway for trucks.

Figure B-3 compares the average weekday share of all trucks versus port-related trucks passing through regional highway gateways in Hampton Roads. I-64 on the Peninsula appears to be even more important to port-related trucks than it is to all trucks, which highlights the importance of I-64 through the Historic Triangle as a major regional gateway for port-related truck traffic.

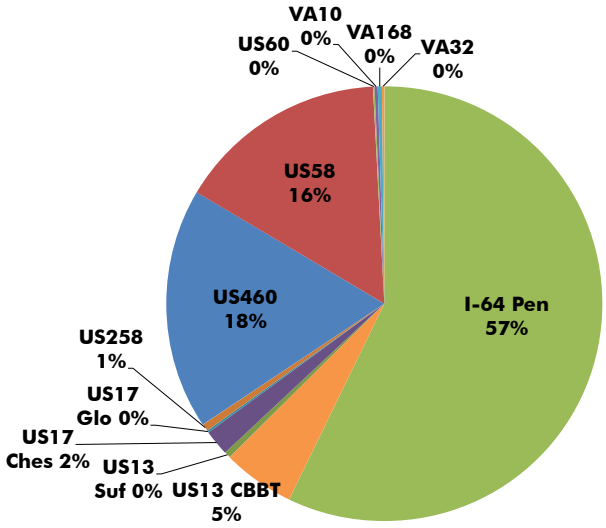


Figure B-1 – Truck Usage of Gateways by Hampton Roads Port-Related Distribution Centers, July 2016 - June 2017

Source: HRTPO analysis of StreetLight data.

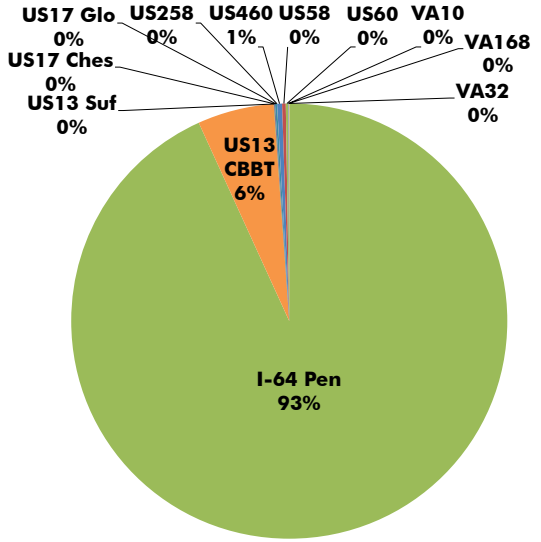


Figure B-2 – Truck Usage of Gateways by Peninsula Port-Related Distribution Centers, July 2016 - June 2017

Source: HRTPO analysis of StreetLight data.

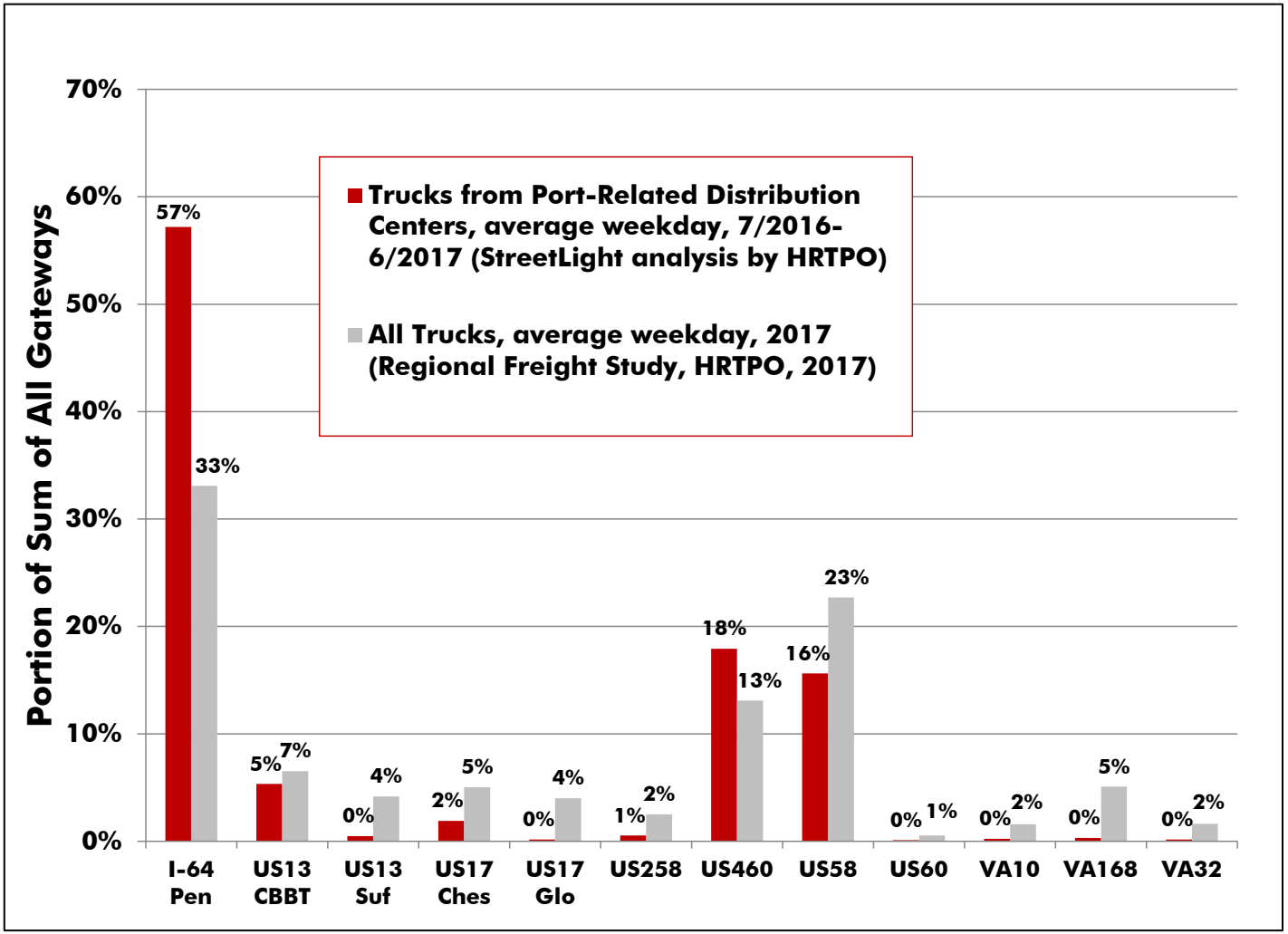
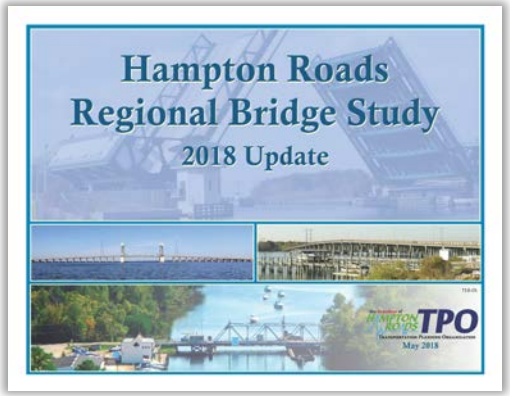


FIGURE B-3 – COMPARISON OF TRUCK USAGE THROUGH REGIONAL GATEWAYS

Source: HRTPO analysis of StreetLight data. "All Trucks" from HRTPO Regional Freight Study was updated with 2017.

Hampton Roads Regional Bridge Study: 2018 Update



Bridges are a prominent part of the Hampton Roads landscape and a critical component of the Hampton Roads transportation system. Because of the importance of bridges to the regional transportation system and concerns about the condition and funding of bridges, the Hampton Roads Transportation Planning Organization began analyzing factors impacting regional bridges in 2007. The Hampton Roads Regional Bridge Study for the first time provided a regional analysis of bridge topics such as bridge inspections and ratings, deficient bridges, bridge funding and projects, and the impacts that the closure of major bridges would have on Hampton Roads travel patterns.

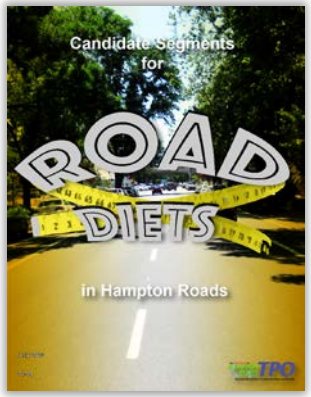
The 2018 update of the Hampton Roads Regional Bridge Study builds on the 2007 study and the update released in 2012. Sections regarding bridge definitions, regional summaries, bridge inspections and ratings, deficient bridges, fracture and scour critical bridges, health indices, bridge funding, bridge projects, and the anticipated cost of maintaining bridges through 2045 are included in this update. In many sections of this report, comparisons are made between the condition of bridges in Hampton Roads and those in other large metropolitan areas throughout the country. This report also includes a section detailing the new Federal bridge performance measures. The information included in this study is similar to the analysis performed in the Bridge section of this report.

Jurisdiction	Total Number of Bridges	Number of Bridges by Year Built								Median Bridge Age (Years)
		Pre 1950	1950 - 1959	1960 - 1969	1970 - 1979	1980 - 1989	1990 - 1999	2000 - 2009	2010+	
Chesapeake	183	8	3	20	16	39	46	24	27	26
Gloucester	24	5	3	3	5	0	3	1	4	45
Hampton	83	2	15	6	10	35	3	10	2	34
Isle of Wight	85	9	19	8	13	8	14	8	6	45
James City	62	8	9	5	19	1	16	4	-	41.5
Newport News	93	6	2	21	3	24	23	8	6	30
Norfolk	189	5	7	56	49	26	43	2	1	43
Poquoson	0	-	-	-	-	-	-	-	-	-
Portsmouth	48	1	2	14	4	4	4	12	7	28
Southampton/Franklin	138	28	7	31	31	18	13	6	4	46
Suffolk	135	13	10	17	35	14	24	16	6	42
Surry	32	8	7	5	6	1	2	2	1	52.5
Virginia Beach	125	3	-	41	13	22	26	6	14	33
Williamsburg	12	5	1	1	3	-	1	1	-	57
York	52	7	9	18	9	1	3	4	1	52
HAMPTON ROADS	1,261	108	94	246	216	193	221	104	79	39

Bridges in Hampton Roads Jurisdictions by Year Built

Source: HRTPO analysis of VDOT and FHWA data. Data for Hampton Roads bridges as of December 2017.

Candidate Segments for Road Diets in Hampton Roads – July 2018



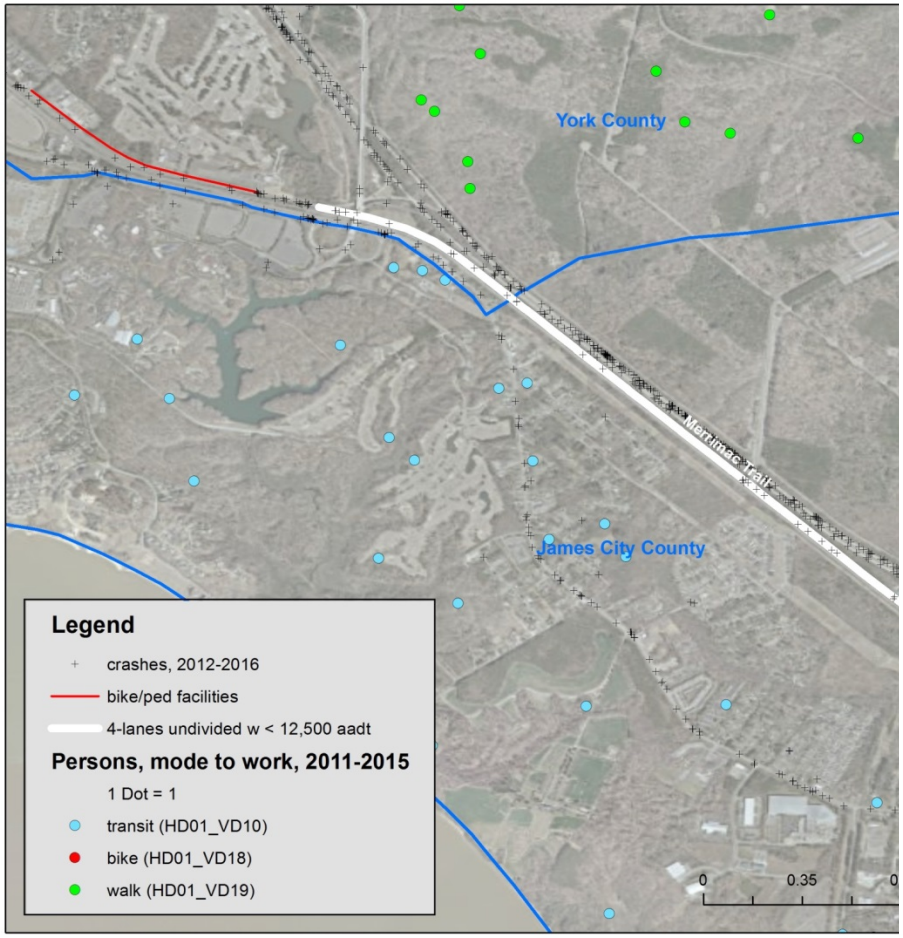
A "road diet" converts a road into a street, i.e. facilitates accessing origins and destinations along the segment, primarily by a) reducing the number of lanes which one must cross to turn left into a driveway, and b) repurposing the width of excess travel lanes typically for a central two-way left-turn lane between travel lanes, on-street parking, and/or bike lanes.

To help localities find roads to investigate for a possible road diet, HRTPO staff determined the criteria defining situations in which road diets may be desirable, and then prepared a database and maps providing information on those criteria for existing 4-lane undivided segments with suitable traffic volumes in Hampton Roads.

Click Here to view a copy of the final report.

Candidate segments located within the Historic Triangle are described on the following pages.

James City



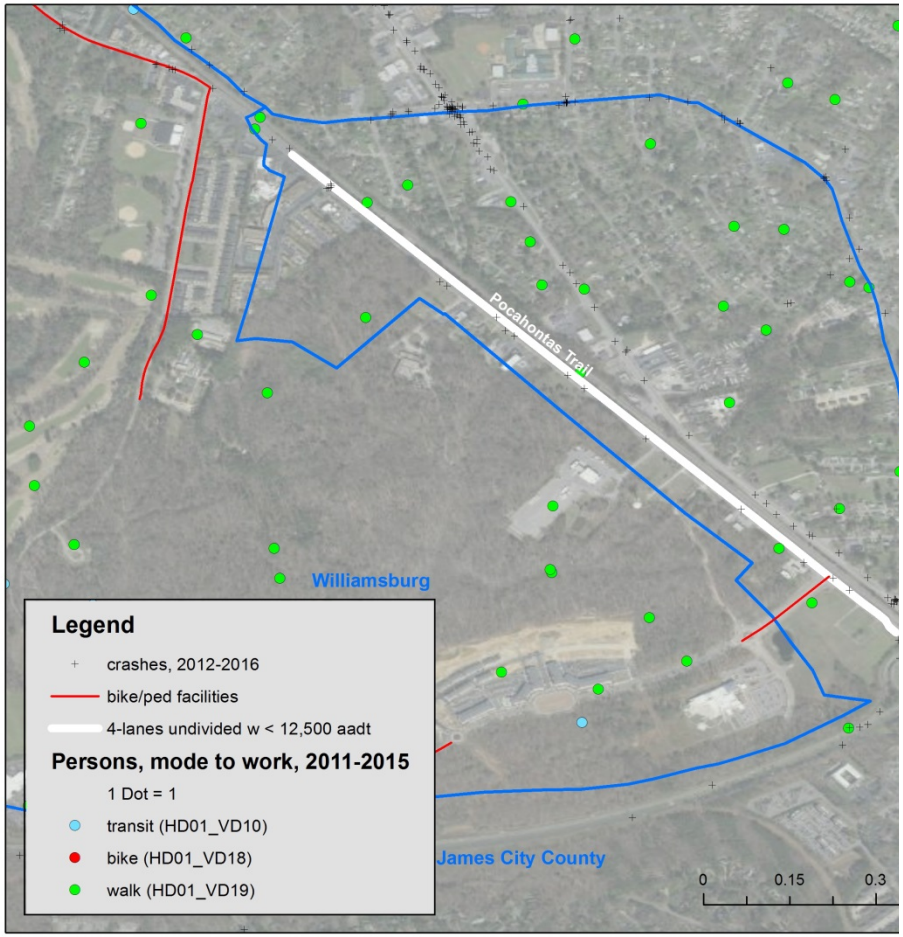
Merrimac Trail, from York/JCC Corporate Limit to I-64 exit 247

Source: HRTPO staff ESRI mapping using crashes and volumes (VDOT), cross-section (Google Maps), commuting (Census)

Merrimac Trail, from York/JCC Corporate Limit to I-64 exit 247

- low crash rate (1 per million VMT), whole segment (JCC and York County)
- no bike/ped facilities in vicinity
- few alternative transportation commuters living nearby
- no existing bus route
- low potential for street-oriented land use (railroad on one side, interstate on other)

In addition, VDOT is studying the Skiffes Creek Connector between US 60 and Merrimac Trail, which may add more truck traffic to Merrimac Trail.



Pocahontas Trail, from Ft Magruder Hotel to Rte 199

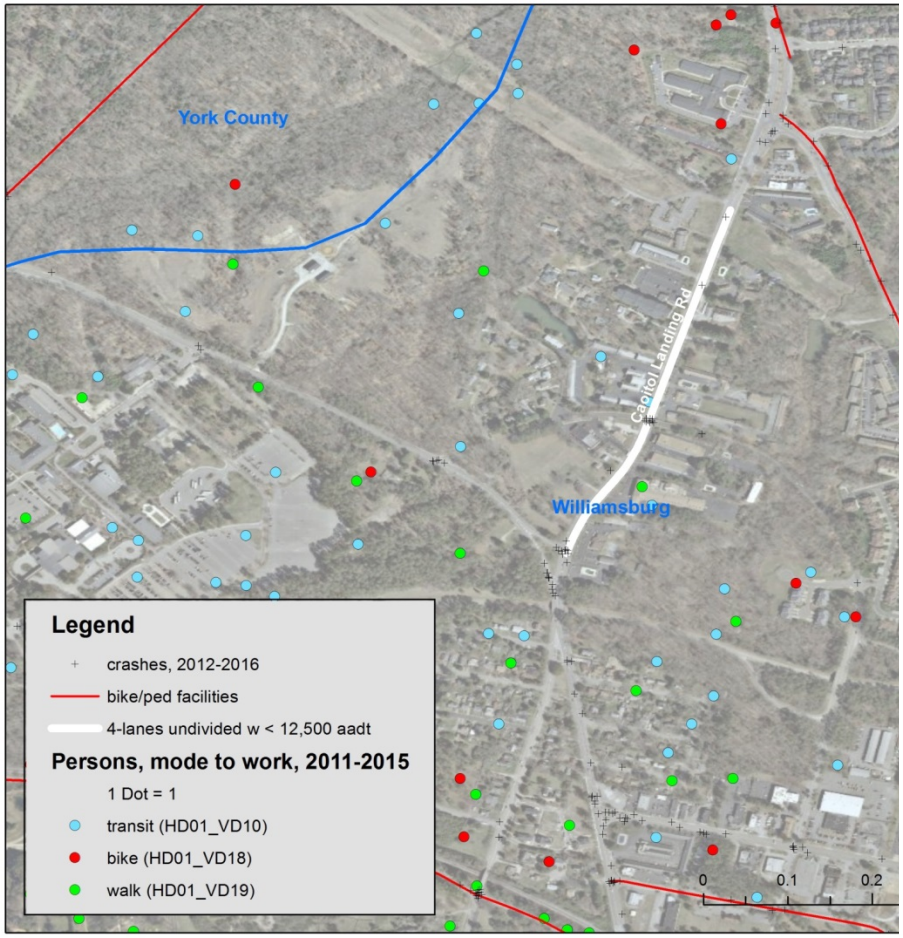
Source: HRTPO staff ESRI mapping using crashes and volumes (VDOT), cross-section (Google Maps), commuting (Census)

Pocahontas Trail, from Ft Magruder Hotel to Rte 199

- low crash rate (1 per million VMT)
- some bike/ped facilities in vicinity
- few alternative transportation commuters living nearby
- existing bus route
- southern side (railroad on northern side): potential for street-oriented land use (vacant land)

Note that changes to this segment may impact access to interstate ramps and other state maintained facilities.

Williamsburg

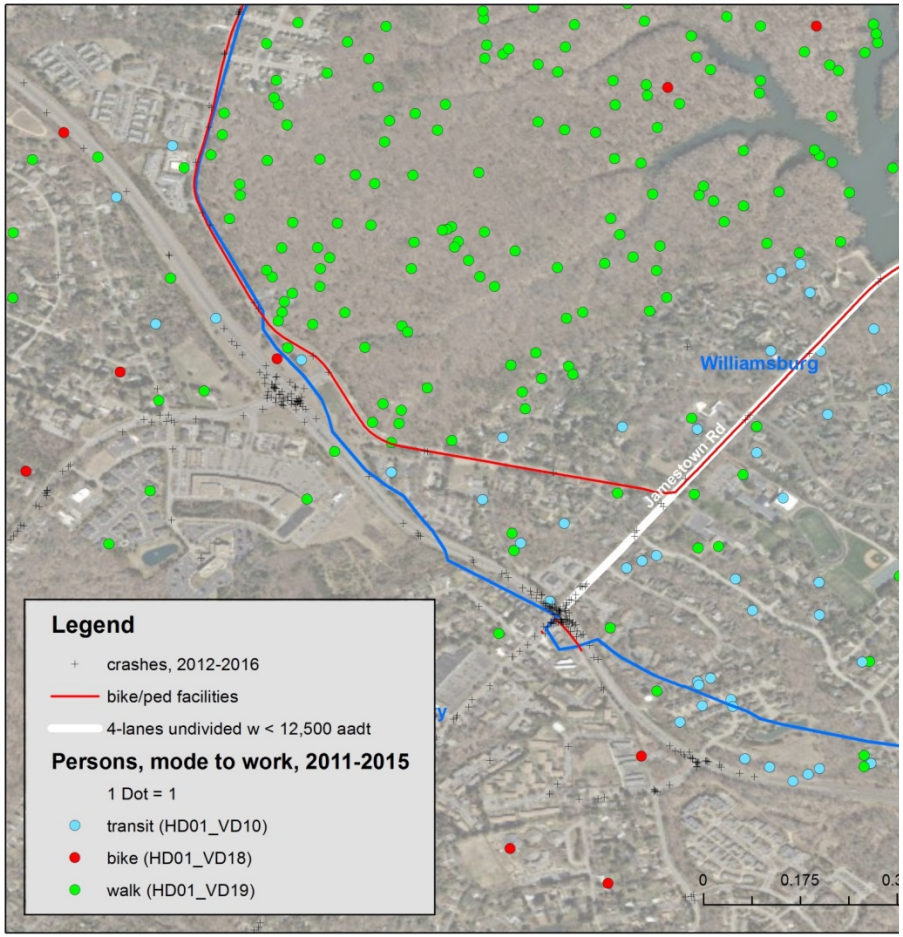


Capitol Landing Rd, from Bypass Rd to Maynard Dr

Source: HRTPO staff ESRI mapping using crashes and volumes (VDOT), cross-section (Google Maps), commuting (Census)

Capitol Landing Rd, from Bypass Rd to Maynard Dr

- low crash rate (3 per million VMT)
- bike/ped facilities nearby
- some alternative transportation commuters living nearby
- existing bus route (orange)
- potential for street-oriented land use (vacant land)



Jamestown Rd, from Rte 199 to College Creek

Source: HRTPO staff ESRI mapping using crashes and volumes (VDOT), cross-section (Google Maps), commuting (Census)

Jamestown Rd, from Rte 199 to College Creek

- low crash rate (1 per million VMT)
- existing bike lanes on subject segment east of John Tyler Ln
- many alternative transportation commuters living nearby
- existing bus route (#6)
- low potential for street-oriented land use (residences served by side streets)

York

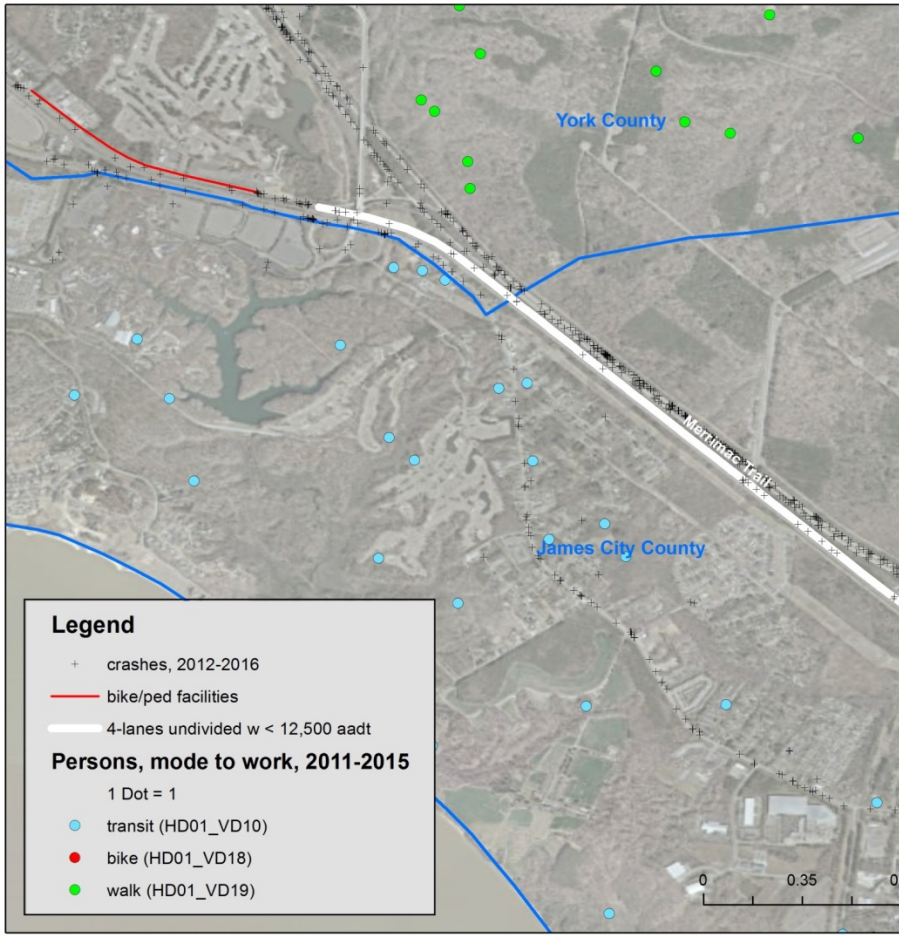
Alexander Lee Pkwy, from Warwick Ct to Stafford Ct

Source: HRTPO staff ESRI mapping using crashes and volumes (VDOT), cross-section (Google Maps), commuting (Census)

Alexander Lee Pkwy, from Warwick Ct to Stafford Ct

- low crash rate (0 per million VMT)
- no bike/ped facilities nearby
- no alternative transportation commuters living nearby
- existing bus route (Orange)
- low potential for street-oriented land use (existing light-industrial area with parking-lot-oriented uses)

Note that the traffic count on this roadway is expected to increase as its industrial park becomes fully developed.



Merrimac Trail, from I-64 exit 243B to York/JCC Corporate Limit

Source: HRTPO staff ESRI mapping using crashes and volumes (VDOT), cross-section (Google Maps), commuting (Census)

Merrimac Trail, from I-64 exit 243B to York/JCC Corporate Limit

- low crash rate (1 per million VMT), whole segment (JCC and York County)
- bike/ped facilities near eastern end of subject segment
- few alternative transportation commuters living nearby
- existing bus route (#11)
- low potential for street-oriented land use (thru road used as alternative to interstate)

In addition, VDOT is studying the Skiffes Creek Connector between US 60 and Merrimac Trail, which may add more truck traffic to Merrimac Trail.

Note that changes to this segment may impact access to interstate ramps and other state maintained facilities.

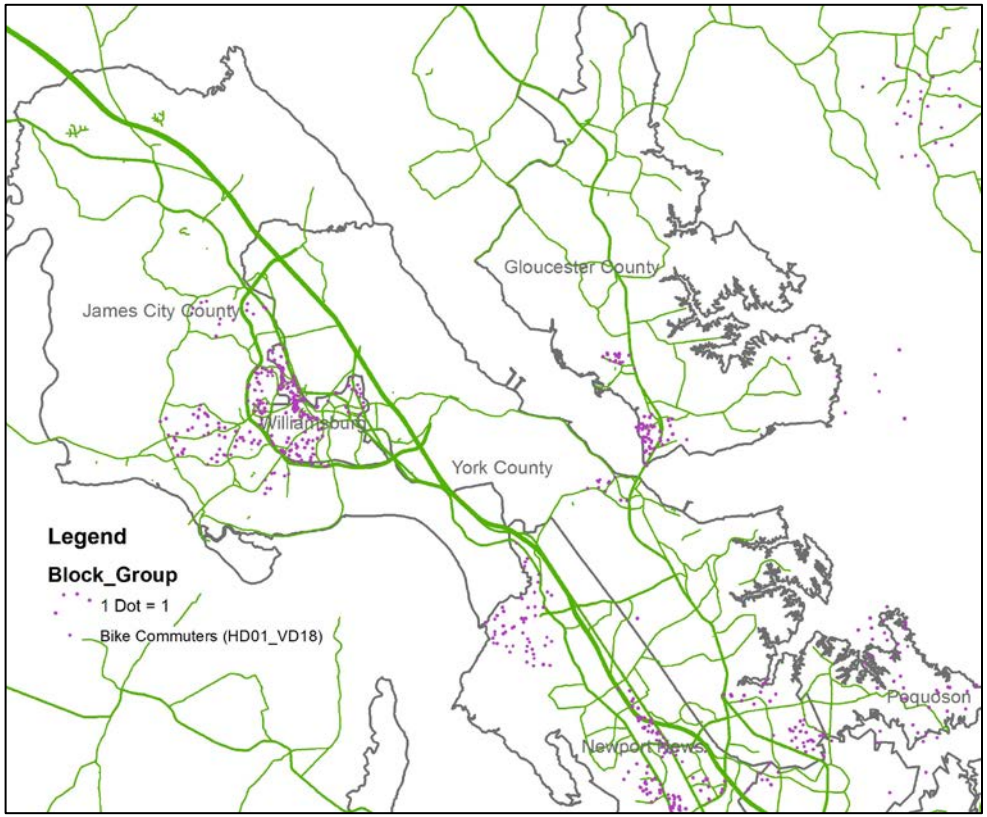
Economic Impact of Bicycle Facilities in Hampton Roads, Phase 1: Literature Review, Benchmarking, and Analysis of Existing Data – April 2019

An economic impact analysis inspects the effect of an event on the economy in a specified area, usually measuring changes in revenue, profits, personal wages, and/or jobs. The purpose of the study is to measure the impact of bicycle facilities on the local economy.

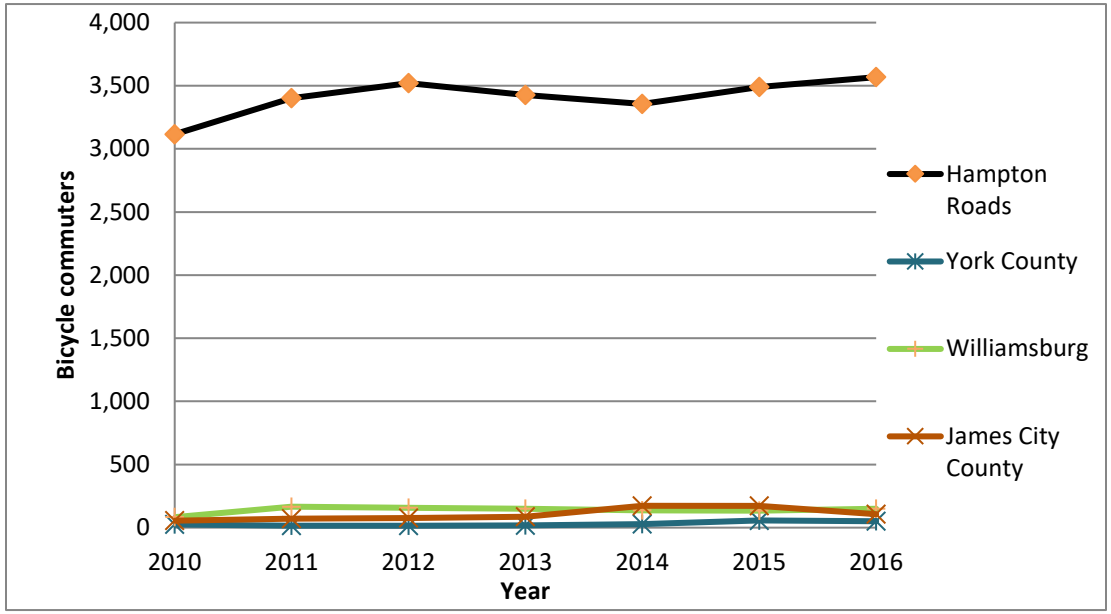
In order to measure economic impact of bicycle facilities, HRTPO staff conducted a literature review, which served as a guide for this study, and then prepared benchmarking criteria, chose competitor cities (with the help of project steering team), and did an analysis of existing data including: path length, number of bike shops, and bicycle event spending.

Click Here to view a copy of the final report.

Findings and analysis from the study for the Historic Triangle are included below.



Bicycle Commuters in the Historic Triangle (James City, Williamsburg, and York)
Source: American Community Survey, 2012-2016



NUMBER OF PEOPLE WHO BIKE TO WORK FOR HAMPTON ROADS, JAMES CITY COUNTY, WILLIAMSBURG AND YORK COUNTY 2010-2016

Source: HRTPO analysis of American Community Survey, 2016

County	Number of bike commuters	Average income of people biking to work (VA)	Total income (product)
Gloucester County	74	$54,285	$4,017,090
Isle of Wight County	6	$54,285	$325,710
James City County	107	$54,285	$5,808,495
Southampton County	2	$54,285	$108,570
York County	50	$54,285	$2,714,250
Chesapeake	256	$54,285	$13,896,960
Franklin	0	$54,285	$0
Hampton	259	$54,285	$14,059,815
Newport News	247	$54,285	$13,408,395
Norfolk	819	$54,285	$44,459,415
Poquoson	39	$54,285	$2,117,115
Portsmouth	198	$54,285	$10,748,430
Suffolk	95	$54,285	$5,157,075
Virginia Beach	1266	$54,285	$68,724,810
Williamsburg	150	$54,285	$8,142,750
Total	3568	$54,285	$193,688,880

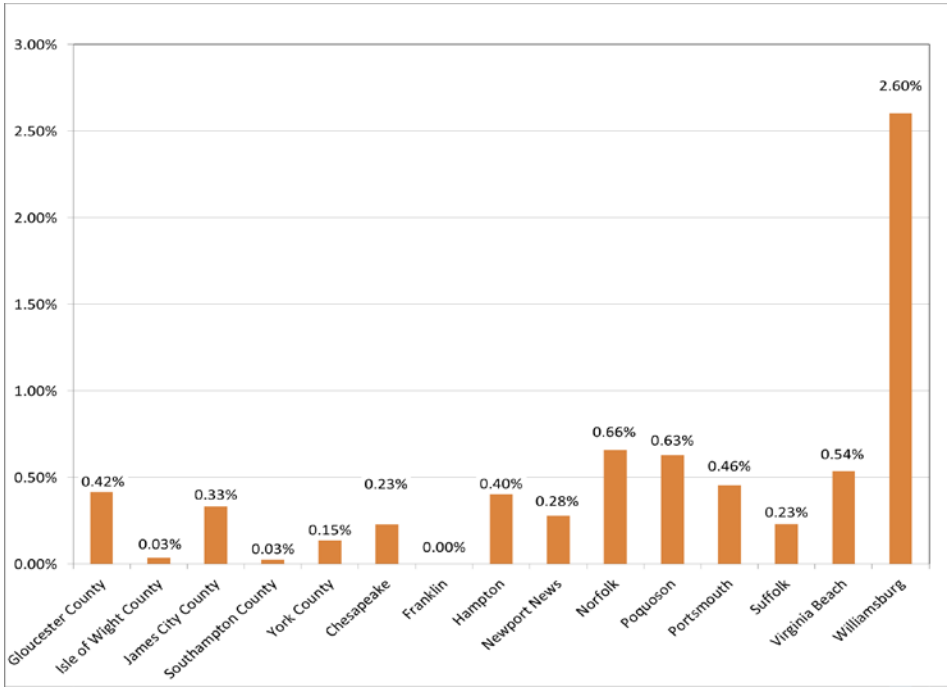
NUMBER OF BIKE COMMUTERS IN HAMPTON ROADS WITH CALCULATIONS AND TOTAL INCOME OF BIKE COMMUTERS

Source: HRTPO analysis of American Community Survey, 2016

	Estimate; Total:	Car, truck, or van: - Drove alone	Car, truck, or van: - Carpooled:	Public transportation (excluding taxicab):	Taxicab	Motorcycle	Worked at home	Walked	Other means	Bicycle	Bike %
Gloucester County, Virginia	17,787	14,906	1,711	36	0	22	642	86	310	74	0.42%
Isle of Wight County, Virginia	17,202	15,233	1,260	30	0	27	520	94	32	6	0.03%
James City County, Virginia	32,169	26,575	2,657	217	41	73	1,969	328	202	107	0.33%
Southampton County, Virginia	7,660	6,640	544	4	0	21	278	60	111	2	0.03%
York County, Virginia	32,672	27,817	2,420	74	15	50	1,371	643	232	50	0.15%
Chesapeake, Virginia	112,502	96,821	8,200	802	32	170	4,016	1,328	877	256	0.23%
Franklin, Virginia	3,433	2,917	321	0	0	0	74	108	13	0	0.00%
Hampton, Virginia	64,324	53,062	5,523	1,633	99	115	1,584	1,550	499	259	0.40%
Newport News, Virginia	88,159	69,734	8,411	3,121	212	307	1,892	3,652	583	247	0.28%
Norfolk, Virginia	124,486	92,516	10,952	4,862	270	366	5,302	8,240	1,159	819	0.66%
Poquoson, Virginia	6,204	5,432	374	0	0	47	285	9	18	39	0.63%
Portsmouth, Virginia	43,324	35,180	3,423	1,158	72	72	1,044	1,730	447	198	0.46%
Suffolk, Virginia	40,928	35,074	3,418	128	42	59	1,290	543	279	95	0.23%
Virginia Beach, Virginia	235,755	193,156	20,425	2,040	147	863	9,434	6,170	2,254	1,266	0.54%
Williamsburg, Virginia	5,763	3,505	565	248	0	0	445	850	0	150	2.60%

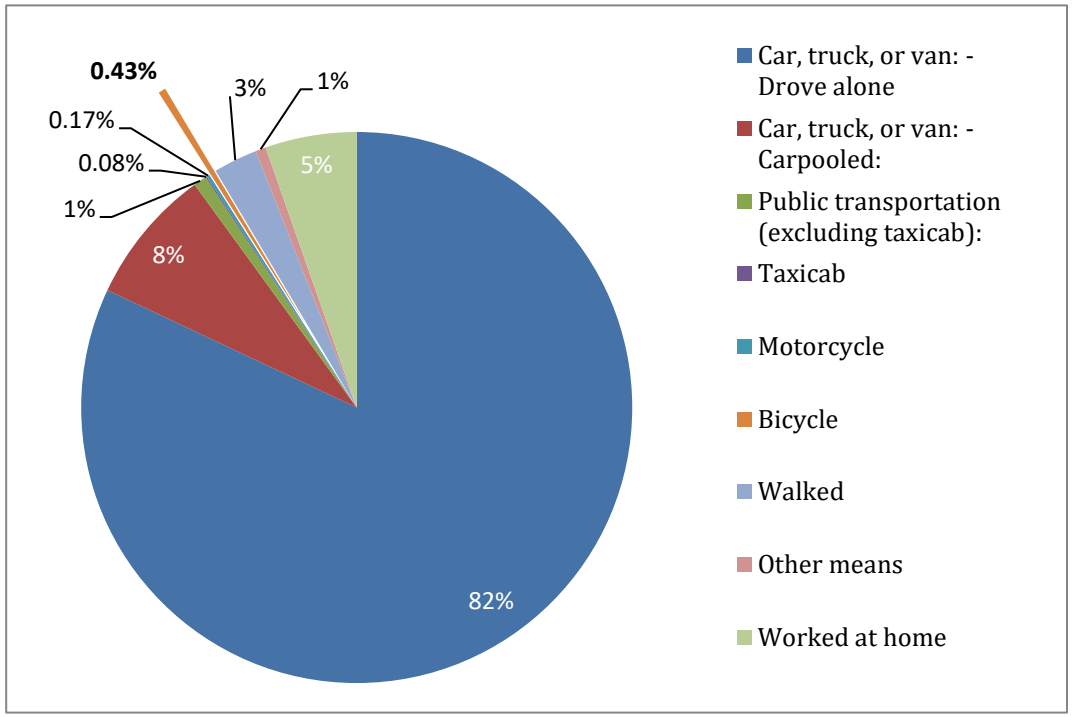
MODE SHARE DATA FOR HAMPTON ROADS

Source: HRTPO analysis of American Community Survey, 2016



BICYCLE MODE SHARE DATA FOR HAMPTON ROADS

Source: HRTPO analysis of American Community Survey, 2016

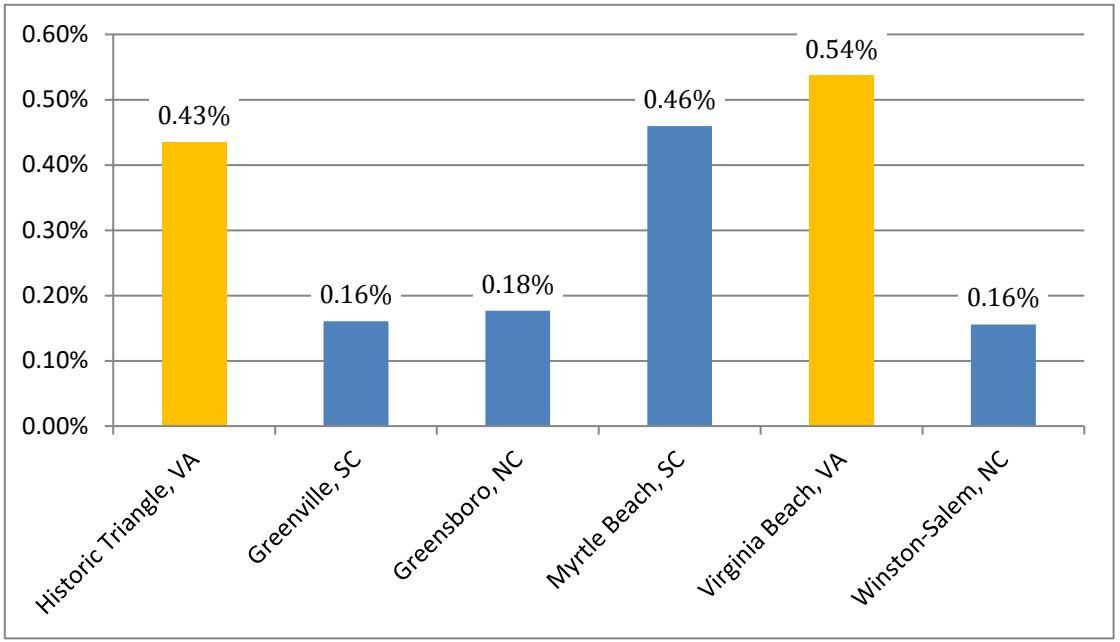


MODE SHARE IN THE HISTORIC TRIANGLE
Source: HRTPO analysis of American Community Survey, 2016

	Total	Car, truck, or van: - Drove alone	Car, truck, or van: - Carpooled	Public transportation (excluding taxicab)	Taxicab	Motorcycle	Worked at home	Walked	Other means	Bicycle	Bike %
James City County, VA	32,169	26,575	2,657	217	41	73	1,969	328	202	107	0.33%
Williamsburg, VA	5,763	3,505	565	248	0	0	445	850	0	150	2.60%
York County, VA	32,672	27,817	2,420	74	15	50	1,371	643	232	50	0.15%
Historic Triangle (JCC+WLMBG+ YC)	70,604	57,897	5,642	539	56	123	3,785	1,821	434	307	0.43%
Greenville, SC	222,920	187,314	19,643	918	134	400	9,406	3,252	1,495	358	0.16%
Greensboro, NC	236,026	194,330	20,905	2,744	350	345	12,317	3,366	1,252	417	0.18%
Myrtle Beach, SC	131,140	109,972	11,790	317	239	434	4,579	2,299	907	603	0.46%
Virginia Beach, VA	235,755	193,156	20,425	2,040	147	863	9,434	6,170	2,254	1,266	0.54%
Winston-Salem, NC	161,825	135,294	12,443	1,722	188	250	7,766	2,672	1,238	252	0.16%

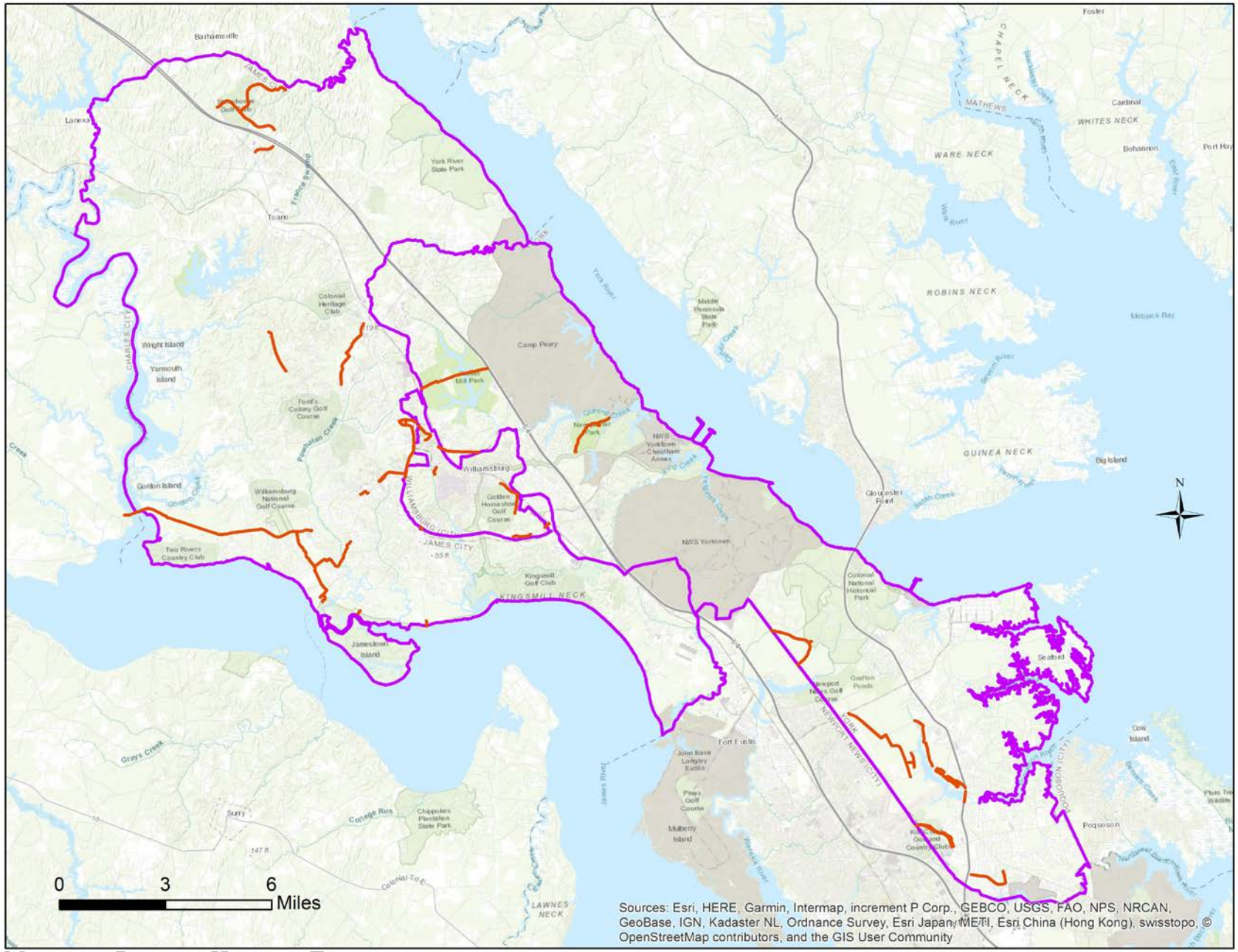
MODE SHARE DATA FOR COMPETITORS, VIRGINIA BEACH AND HISTORIC TRIANGLE

Source: HRTPO analysis of American Community Survey, 2016



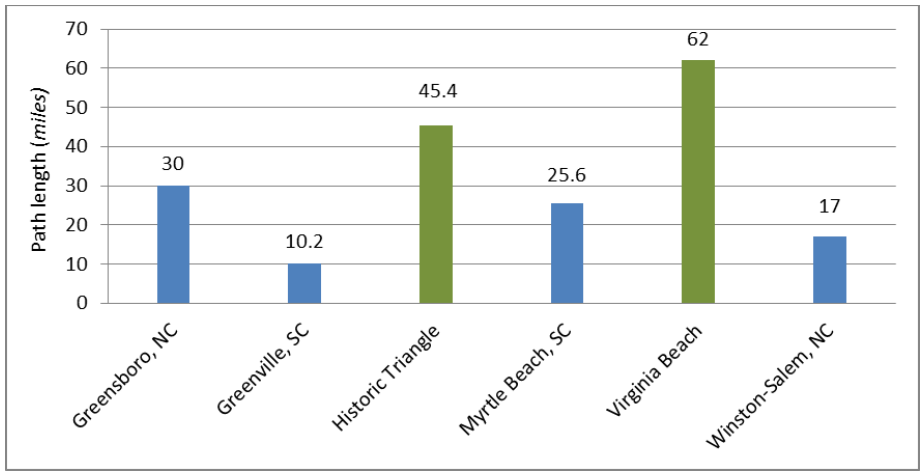
BICYCLE MODE SHARE FOR HISTORIC TRIANGLE, GREENVILLE, GREENSBORO, MYRTLE BEACH, VIRGINIA BEACH, AND WINSTON-SALEM

Source: HRTPO analysis of American Community Survey, 2016



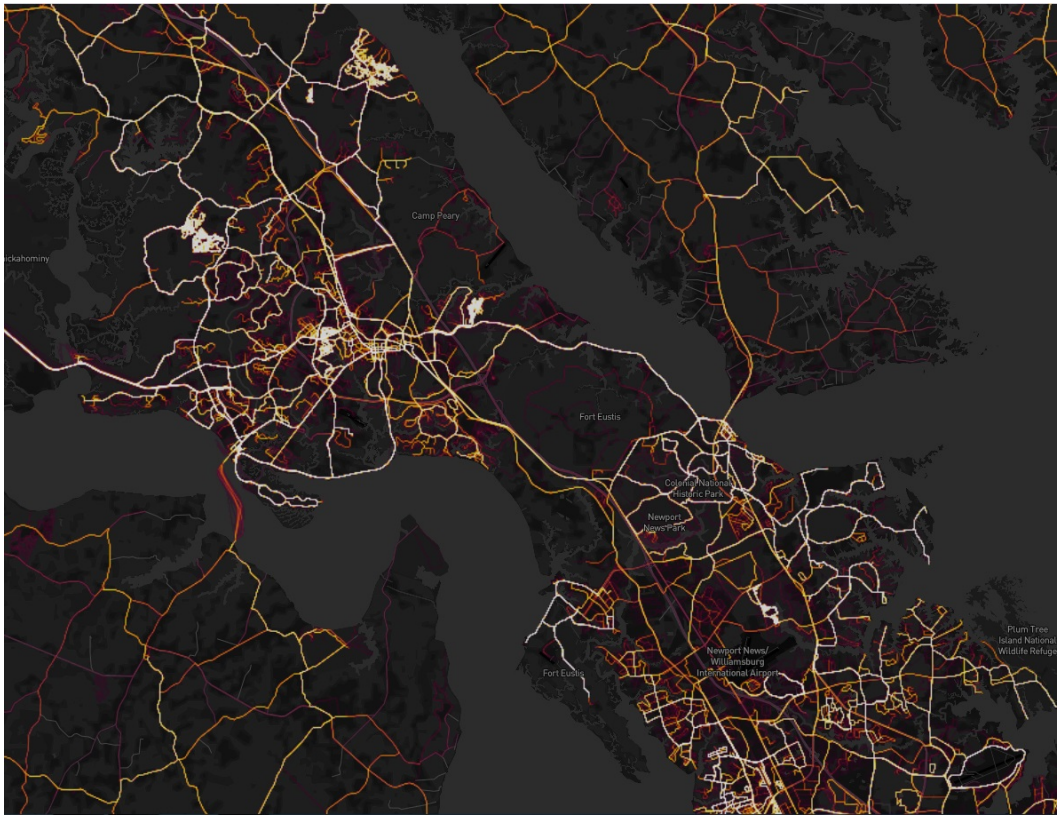
MULTI-USE PATHS IN HISTORIC TRIANGLE SHOWN IN RED

Source: HRTPO, 2018



PATH LENGTHS FOR HISTORIC TRIANGLE, VIRGINIA BEACH AND COMPETITORS

Source: HRTPO, 2018



STRAVA HEAT MAP FOR HISTORIC TRIANGLE

Source: https://www.strava.com/heatmap#14.00/-76.26597/36.86823/hot/all